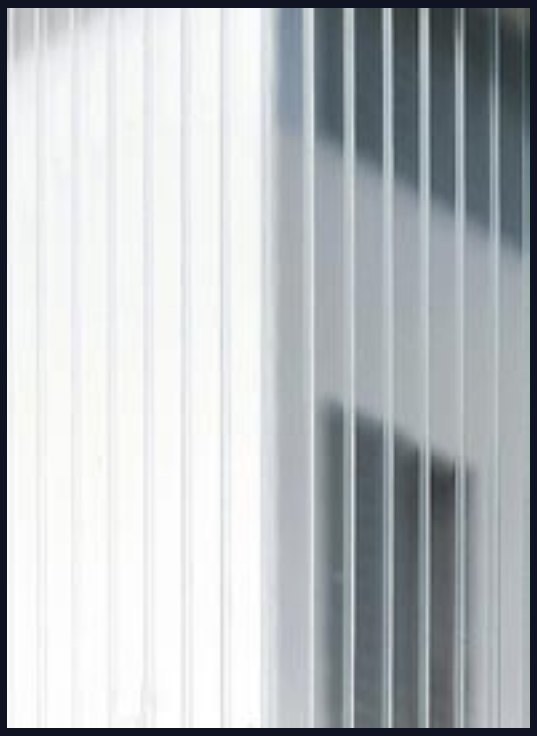
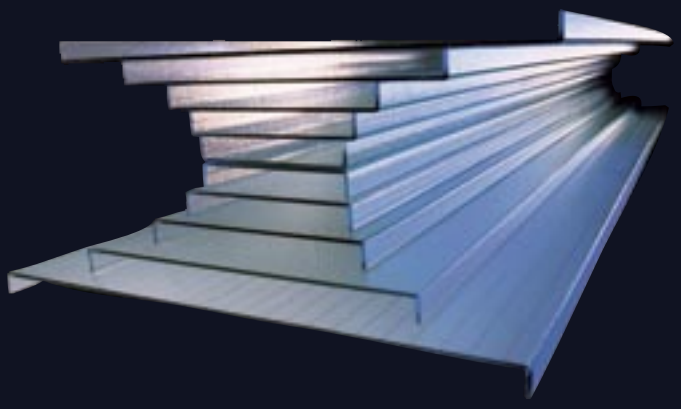
LAMBERTS
LINIT



# Technical Indroduction
# U-Glass

www.lamberts.info

# LAMBERTS LINIT



**The Glasfabrik LAMBERTS**
**Company history**

The staff at the Glasfabrik Lamberts has been involved in the manufacturing of rolled glass, i.e. glass formed in rolling processes, since the founding of the company in 1887 by glass engineer Laurenz Lamberts. Since then the company has been a family-owned business and is the only medium-sized company in Europe to manufacture cast glass without being bound by any group.

**Wide range of products and flexibility**

We are the only cast glass manufacturers in the world to produce every existing type of cast glass:

LAMBERTS LINITU-profile glass,
patterned glass (and also special patterned glass for facades),
solar glass (optimized cast glass for the efficient use of solar energy, available since 1993!) as well as
wired and wired patterned glass

**Ecology**

Lamberts is the first and only glass manufacturer in the world to manufacture all glass types using an oxygen-fired melting furnace, this currently being the most ecologically sustainable method available!
This pioneering step was based on the recognition that production processes should be evaluated and improved in terms of environmental friendliness as well, and the project was implemented by Lamberts back in the nineteen nineties already. LAMBERTS has gradually refined its manufacturing processes over the years, enabling its glass products to be produced with the maximum possible share of recycled glass, and of the highest quality.
Emissions that are common in glass manufacturing are already reduced to a minimum during the production processes at Lamberts, this being particularly due to the use of the special glass furnace. An intricate filter system reduces any remaining emissions to a level that sets standards, especially on a global scale.
These and many additional individual measures enable us to offer you glass products that for many years now not only successfully contribute towards an ecologically sustainable future in architecture, but also apply the most ecologically friendly methods possible in their manufacturing process.
This year, within the scope of a large international competition organized by the renowned journal "Sustainable Industries", LAMBERTS LINIT U-profile glass has been distinguished by the jury as one of the TOP 10 GREEN BUILDING PRODUCTS 2008, and is the only glass product among the winners.

**Quality**
**"MADE IN GERMANY"**

LAMBERTS LINIT U-profile glass is manufactured according to the highest quality standards by a workforce that fosters family tradition, and solely in our main factory in Wunsiedel, Upper Franconia (Germany). Certification in compliance with the Quality Standard DIN ISO 9001 is a matter of course.

Although channel glass was originally a low-cost solution for simple industrial and commercial buildings, the constant further development of our glass in a partner-like cooperation with our suppliers and customers, has led to a U-profile glass that boasts refined properties, high quality and technical versatility, and is used today as LAMBERTS LINIT U-Glass in many design-oriented projects all over the world, including top-level architecture projects such as museums, theatres, hospitals, shopping centres, sports stadiums etc. .

LAMBERTS

World famous architects use **LAMBERTS LINIT**.
Internationally renowned architect awards such as the AIA Honour Award 2008, for example, presented actually to two projects with large-area and highly sophisticated **LAMBERTS LINIT** applications, distinguish the architect's excellent work and also our glass products.

The deep conviction that even more brilliant work could be accomplished with our glass encouraged us at an early stage to go ahead and break new ground.

Since the year 2000, for example, we are the first glass manufacturers in the world to offer **LAMBERTS LINIT U-Profile Glass** as standard, in lengths of up to 7 m, as tempered safety glass, with or without coloured enamelling or sandblasting. We are also continuously expanding the range of glass surfaces in order to meet the growing demands put by architects for highest aesthetic solutions. On the pages that follow you will find a small selection of some already completed projects.
Just recently, for example, a bore-hole mounted, point-fixed profile glass facade was successfully implemented for the very first time using **LAMBERTS LINIT** (see page 13).

## Excellent reasons to decide in favour of

# LAMBERTS LINIT

## Why make do with less?



The information in this brochure is not related for use in a specific country. Therefore, specific local and national conditions are to be conscientiously observed during consideration, planning and execution.

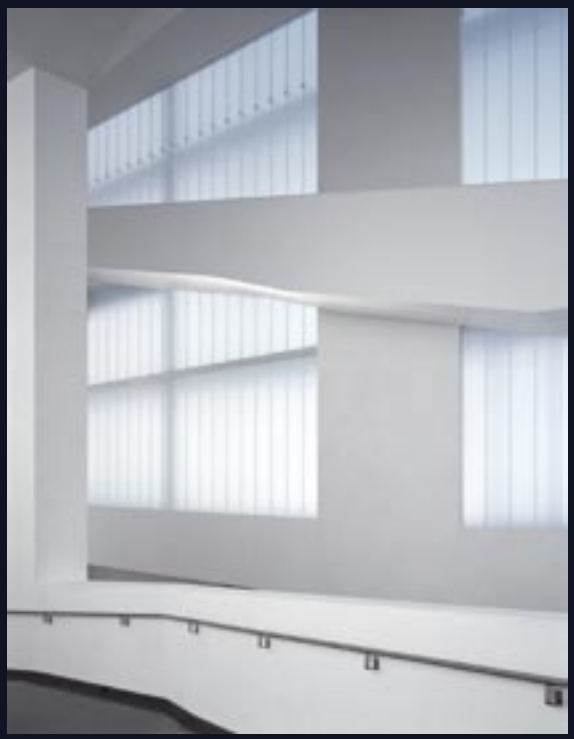
# LAMBERTS LINIT

## 1. LINIT Architecture

No.1 of the 10 Best Architectural Marvels of 2007
TIME Dec. 24, 2007

AIA Institute Honor Award for Architecture 2008
AIA THE AMERICAN INSTITUTE OF ARCHITECTS





Nelson Atkins Museum / Kansas City / USA
Steven Holl Architects / New York / USA

National University Museum Seoul / Seoul / South-Korea
Architect: Rem Koolhaas / Rotterdam / Netherlands

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# LAMBERTS LINIT



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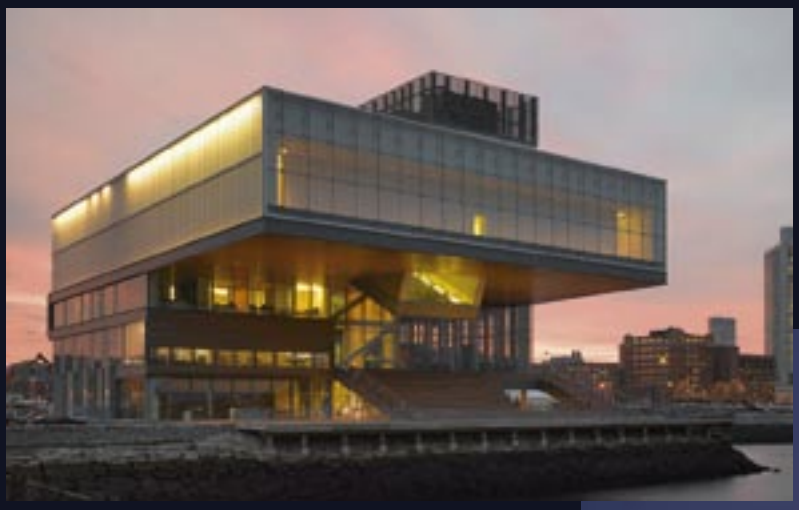
Glass Association of North America
**Design in Glass Awards**
2007
**Division: Tempered Glass - Commercial**
Project: Santa Monica Civic Center Parking Structure
Santa Monica, California, USA
Designer: Moore Ruble Yudell Architects & Planners
**Manufacturer: LAMBERTS Glasfabrik / Germany**

Civic Center Parking / Santa Monica / USA
Moore Ruble Yudell Architects / Santa Monica / USA



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**AIA Institute Honor Award for Architecture 2008**

AIA

THE AMERICAN INSTITUTE OF ARCHITECTS

top: Institute of Contempory Arts / Boston / USA  Architects: Diller, Scofidio + Renfro
bottom: Shaw Center / Baton Rouge / USA  Architects: Schwartz-Silver / Boston / USA

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# LAMBERTS LINIT



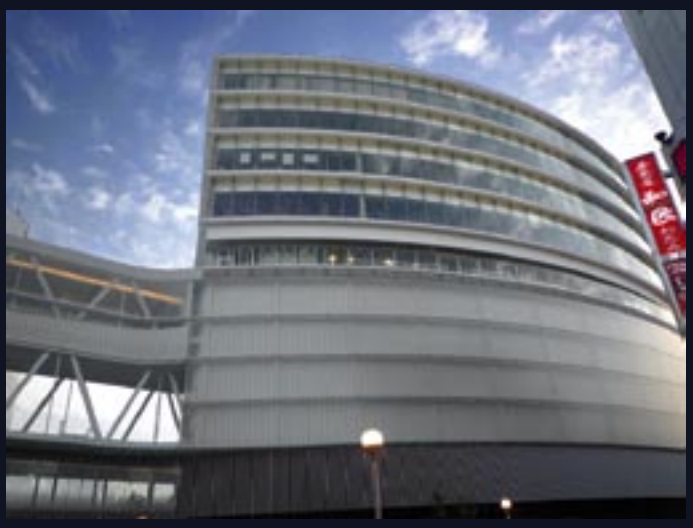
New Swiss Embassy / Washington/ USA
Steven Holl Architects / New York / USA

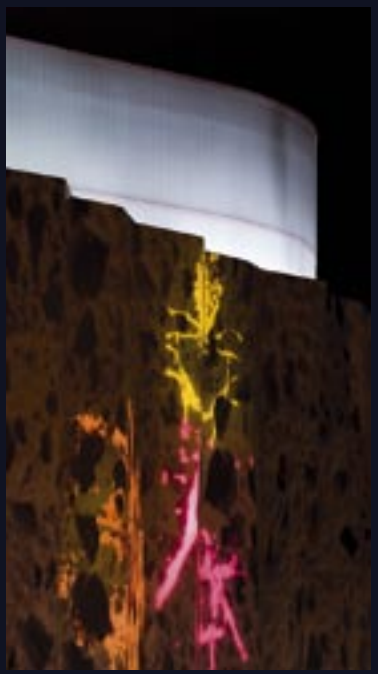


Art Gallery Stihl and Art School Waiblingen / Waiblingen / Germany
Hartwig N. Schneider architects / Stuttgart / Germany

LAMBERTS

# LAMBERTS LINIT





top: Kashiwa Shopping Center / Tokyo / Japan PLANTEC Architects / Tokyo / Japan
bottom: Centro Commercial / Soria / Spain Architects: Vaillo & Irigaray / Pamplona / Spain

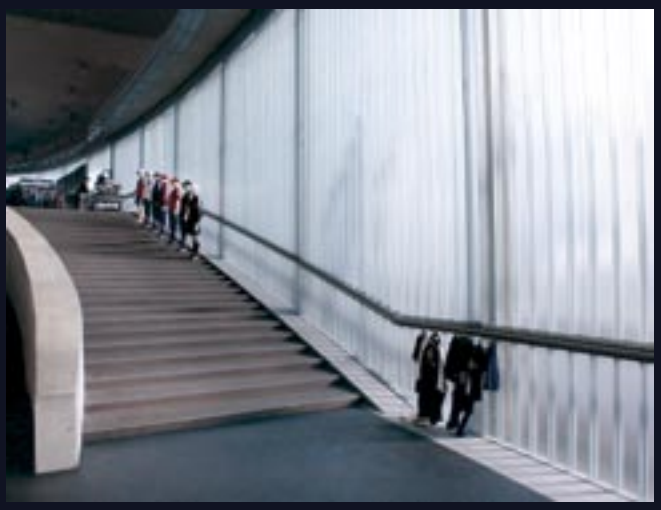
© CHR.GEBLER

© E.HEDLER

top: University Hospital / Hamburg / Germany Architect: Prof. Sill / Hamburg / Germany
middle: BMW Sales Office / Munich / D Architects: Achammer-Tritthart & Partner / Innsbruck / A
bottom: Traffic and Transport Museum / Luzern / Switzerland Architects: Gigon Guyer / Zurich / CH

LAMBERTS

# LAMBERTS LINIT





Adidas Factory Outlet / Herzogenaurach / Germany
Architects: Wulf & Partner / Stuttgart / Germany

top: National Library Prague / Prague / Czech Republic  Projektil Architecti / Prague / CZ
bottom: Shopping Center Luisenforum / Wiesbaden / Germany
Gatermann + Schossig Achitects / Cologne / Germany

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# LAMBERTS LINIT

top: Biomedicum / Helsinki / Finland Architects: Gullichsen Vormala / Helsinki / FIN
middle: High-Rack Facilities / Geesthacht / D Architects: Gerkan, Marg & Partner / Hamburg / D

top: Sportcenter / Zug / Switzerland
Architects: Bétrix & Consolascio / Erlenbach / Switzerland
bottom: IMAX Millenium Point / Birmingham / GB /
Nicholas Grimshaw Architects / London / GB

LAMBERTS

# LAMBERTS LINIT


INTERNATIONAL ASSOCIATION OF LIGHTNING DESIGNERS **IALD**

**2008 Awards of Excellence:**
**Ian Thorpe - Aquatic Centre**

top: Living Divani Headquarters/ / Milano / Italy Architects: Lissoni Associati / Milano / Italy
bottom: Ian Thorpe Ultimo Aquatic Centre / Sydney / Australia Architect: Harry Seidler / Sydney / Aaustralia

## 2. LINIT U-profiled glass

LINIT channel shaped glass – an alkali-lime glass consisting mainly of sand, lime, soda and dolomite – is a special form of moulded glass.

These raw materials are carefully melted down in the world's first oxygen-fired – and therefore also environmentally friendly – glass moulding oven. The glass strip taken from the oven is bent into a U shape whilst still in its plastic phase. It is then cooled and hardened. After the precisely controlled cooling process, the desired lengths are automatically cut, checked for quality, and packaged in batches in transport foil.

The resulting glass channels all have an individual optical character, which gives the effect of a lively, light-refracting glass facade.

In contrast e.g. to floatglass, no two LAMBERTS LINIT glass tracks have the same optical and physical properties, although they naturally all meet the values and characteristics listed in the respective LINIT product definitions.

### 2.1 Production

The glass mass – still in its plastic form after leaving the oven – is rolled into a U shape before it is cooled and hardened.

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## 2.2 LINIT product range

| LINIT-Glass type: | width w mm | flange height h / mm | thick-ness t / mm | weight | | uncoated | coated glass | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | kg / m² | kg / m | | 1.7 W | solex | azur |
| P 23 504 | 232 | 41 | 6 | ca. 19,5 | ca. 4,50 | SP 3 | - | - | - |
| P 23 504, 8 lw | 232 | 41 | 6 | ca. 19,5 | ca. 4,50 | SP 3 | -. | - | - |
| P 26 504 | 262 | 41 | 6 | ca. 19,0 | ca. 5,00 | NP | NP | SP 1 | NP |
| P 26 504, 8 lw | 262 | 41 | 6 | ca. 19,0 | ca. 5,00 | NP | SP 1 | - | SP 1 |
| P 26 clarissimo | 262 | 41 | 6 | ca. 19,0 | ca. 5,00 | SP 1 | SP 1 | - | SP 1 |
| P 26 clarissimo, 8 lw | 262 | 41 | 6 | ca. 19,0 | ca. 5,00 | SP 1 | SP 1 | - | SP 1 |
| P 33 504 | 331 | 41 | 6 | ca. 18,2 | ca. 6,00 | NP | SP 1 | - | -. |
| P 33 504, 10 lw | 331 | 41 | 6 | ca. 18,2 | ca. 6,00 | SP 2 | SP 2 | - | - |
| P 50 504 | 498 | 41 | 6 | ca. 17,0 | ca. 8,50 | NP | SP 1 | SP 2 | SP 1 |
| P 50 clarissimo | 498 | 41 | 6 | ca. 17,0 | ca. 8,50 | NP | SP 2 | - | SP 2 |
| P 23/60/7 504 | 232 | 60 | 7 | ca. 25,5 | ca. 6,00 | NP | SP 1 | - | SP 1 |
| P 23/60/7 504, 8 lw | 232 | 60 | 7 | ca. 25,5 | ca. 6,00 | SP 1 | SP 2 | - | SP 2 |
| P 26/60/7 504 | 262 | 60 | 7 | ca. 24,6 | ca. 6,50 | NP | NP | SP 1 | NP |
| P 26/60/7 504, 8 lw | 262 | 60 | 7 | ca. 24,6 | ca. 6,50 | NP | SP 2 | - | SP 2 |
| P 26/60/7 504, 8+2 lw | 262 | 60 | 7 | ca. 24,6 | ca. 6,50 | SP 3 | - | - | - |
| P 26/60/7 504, 16 lw | 262 | 60 | 7 | ca. 24,6 | ca. 6,50 | SP 2 | - | - | - |
| P 26/60/7 clarissimo | 262 | 60 | 7 | ca. 24,6 | ca. 6,50 | NP | SP 1 | - | SP 1 |
| P 26/60/7 clarissimo, 8 lw | 262 | 60 | 7 | ca. 24,6 | ca. 6,50 | SP 1 | - | - | - |
| P 26/60/7 solar | 262 | 60 | 7 | ca. 24,6 | ca. 6,50 | NP | SP 1 | - | SP 1 |
| P 26/60/7 solar, low iron | 262 | 60 | 7 | ca. 24,6 | ca. 6,50 | SP 3 | - | - | - |
| P 26/60/7 cord | 262 | 60 | 7 | ca. 24,6 | ca. 6,50 | SP 1 | SP 1 | - | SP 1 |
| P 26/60/7 prismasolar | 262 | 60 | 7 | ca. 24,6 | ca. 6,50 | SP 2 | - | - | - |
| P 26/60/7 Ice | 262 | 60 | 7 | ca. 24,6 | ca. 6,50 | SP 2 | - | - | - |
| P 33/60/7 504 | 331 | 60 | 7 | ca. 23,5 | ca. 7,70 | SP 1 | SP 2 | - | SP 2 |
| P 33/60/7 504, 10 lw | 331 | 60 | 7 | ca. 23,5 | ca. 7,70 | SP 3 | - | - | - |
| lw = longitudinal wires | | | | | | | | | |

Obviously, from a certain minimum requirement quantity, it is also possible to add your desired decor into LINIT channel shaped glass. When planning this, appropriate development times and costs must be observed.

The extent to which the various LINIT types fulfil country-specific building regulations (e.g. authorisations etc.) can be found at www.lamberts.info or from our sales personnel.

The tolerance of the above given dimensions are in compliance with the specifications of the EN 572, if not otherwise specified in the respective Lamberts' product specification.

Explanation of abbreviations:

NP (Normal Production):
The LAMBERTS LINIT types marked with "NP" are manufactured regularly, as standard, in short intervals between the production runs and are mostly kept in stock, as demand permits.

SP 1 (Special Production):
The LAMBERTS LINIT types marked with "SP 1" are usually manufactured in regular special productions. These are, however, only possible when the order is for a certain minimum quantity, or, if the minimum quantity is fallen short of, the order can be directly combined with the basic normal production "NP" and other special orders "SP 1". These products are usually kept in stock in smaller quantities.

SP 2 (Special Production):
The LAMBERTS LINIT Types marked with "SP 2" are manufactured in infrequent special production runs (approx. two to three times a year). These can only be performed when the order is for a certain minimum quantity or, if the minimum quantity is fallen short of, the order can be directly combined with the first Special production "SP 1" and other special orders "SP 2".

SP 3 (Special Production):
The LAMBERTS LINIT Types marked with "SP 3" are manufactured in extremely seldom special production runs (usually maximum once a year). These are only possible when the order is for a certain minimum quantity or, if the minimum quantity is fallen short of, the order can be directly combined with other special orders "SP 3".

If you are interested in LAMBERTS LINIT glass types of the "SP" category, we request that the planner should consult us in due time prior to the tender and that the general contractor should consult us in due time prior to submission of a bid or before accepting an order, in order to determine whether sufficient quantities are in stock from previous productions, and can be used for the respective order, or whether the defined minimum order quantities for the respective special production are met.

Spare quantities for any breakage or repairs must be accounted for by the customer in the order quantity.

A subsequent production is only possible when the required minimum production quantities are reached again (for information concerning a concrete project case please contact our sales personnel).

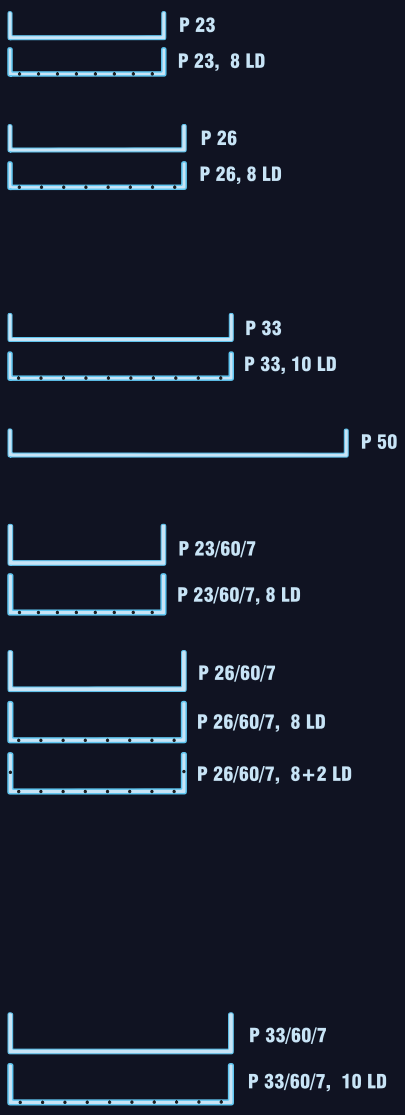
Under certain conditions it is possible to make reservations, especially for rarer special productions "SP 2" and "SP 3"!

For all other LINIT types that are not explicitly listed in the table or not marked with an abbreviation "NP" or "SP" it must be clarified in advance as to whether these are technically and/or commercially feasible. This must be clarified by the planner in due time prior to the tender and by the general contractor prior to the submission of a bid or acceptance of an order.

The above specifications on Normal and Special Productions relate to average demand situations and are only for basic orientation regarding possible constellation and availability.
In the case of concrete projects, however the respective product availability as well as delivery times must be clarified by the planner in due time prior to the tender and by the general contractor prior to the submission of a bid or acceptance of an order.

The company Glasfabrik LAMBERTS GmbH & Co. KG reserves the right to change the range of products without prior announcement!

All details are subject to correction and on basis of our General Business Terms and Conditions and Technical Delivery Terms!

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**Dimensions**

By contrast to flat panes of glass and due to its U shape, LINIT channel shaped glass has excellent load-bearing capacities and can therefore be installed in very considerable lengths (up to 7m depending on wind load/stress) without any intermediate support.
LINIT U-profiled glass has such high static strength that side braces can usually be avoided. The result is a façade which provides a maximum of glass and a minimum of frame profile.
LAMBERTS LINIT channel shaped glass is produced in seven basic types, which differ with respect to the U shape and in their dimensions. LAMBERTS LINIT produced according to our given product specifications (available from www.lamberts.info and from our sales personnel) – unless expressly stated otherwise.

LINIT special glasses, with divergent glass thickness, web width, and flange heights can be produced in special productions, depending on special requirements, from a certain order size. If required, definitive information is available from our sales department. For special glasses, if required, the tolerances and surface dimensions given in the respective product specifications may not be applicable. Where needed, details of this should be obtained prior to production from those involved in the project, planning and ordering.

LINIT U-profiled glass is supplied from 100 cm up to a maximum length of 700 cm depending on type. Within this range, fixed dimensions may be ordered to any desired length, in observance of production tolerances.

## 2.3 Aesthetics and functionality of LINIT U-Profiled glass

**LINIT Dessins and surfaces**

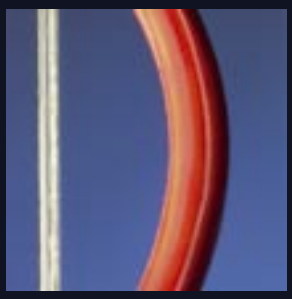
All LINIT glass types are manufactured as standard with Décor "504" (pearl structure), which features excellent light scattering properties.

**LINIT clarissimo**, is a production –technical further development of the LINIT clear, which has experienced marked success for many years. The **LINIT clarissimo** is produced using non structure rollers, and its good transparency from the rolled glass provides the observer with an additional aesthetic attraction. However it should be noted that the optical qualities of rolled glass are fundamentally incomparable with the surface and transparency of float glass as the production techniques are completely different.

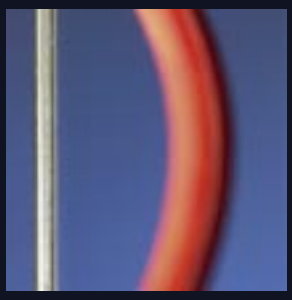
**LINIT solar** is a smooth silky surface structure, which on one hand allows ideal energy gains and on the other hand, due to its elegant appearance, meets highest aesthetic demands. This surface was developed by the Glasfabrik Lamberts for Steven Holl Architects, New York and was applied for the first time in the Nelson Atkins Museum of Arts (also see our separate projects brochure). Since then **LINIT solar** was used not only in several follow-up projects of Steven Holl, like Pratt Institute/NY, Swiss Embassy/Washington and Kunstens Hus/Herning, but also in many other buildings of highest aesthetic demands across the globe.

This high claim of design can also be met by the new **LINIT cord**. The very fine line-shaped surface structure also distinguishes trough its extraordinary elegance. In addition **LINIT cord** surprises through different viewing angles, again and again, with new astonishing and appealing optical effects, which however are not intrusive, but appear timelessly casual.

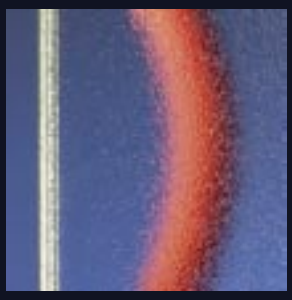
**LINIT prismasolar** is an expressive surface structure developed specially by Lamberts, which – when laid horizontally – serves both as seasonal shade and to bring light into the depths of the room (see page 32). Furthermore, this extravagant structure, which is unique on the market for rolled glass, also provides interesting lighting effects and unexpected optical illusions.



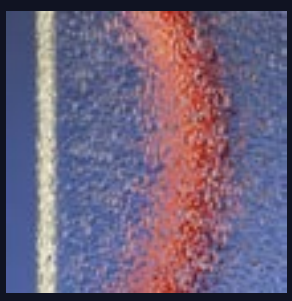
Surface of the glass: clarissimo



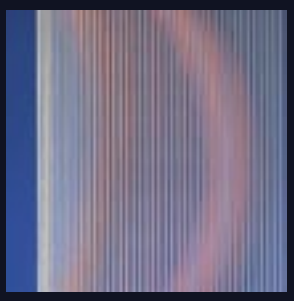
Surface of the glass: solar



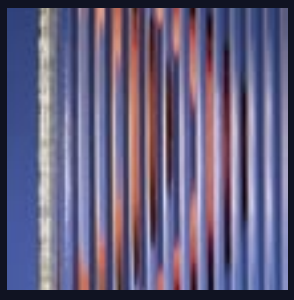
Surface of the glass: 504 perl



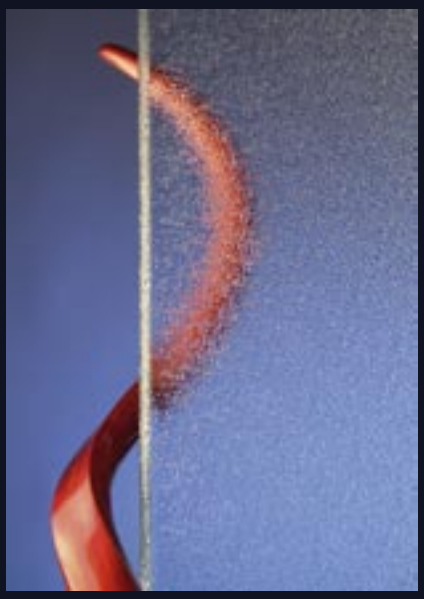
Surface of the glass: Ice

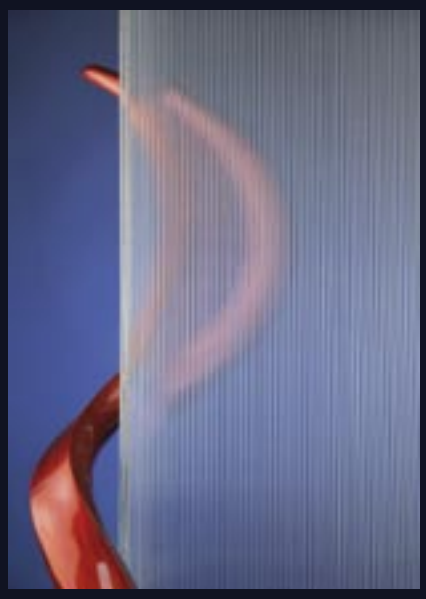


Surface of the glass: cord



Surface of the glass: prismasolar





All images are done at studio conditions, which may differ from site conditions.
Production tolerances have to be taken into account as well.

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**LINIT Ice** is a new surface structure from Lamberts, which accentuates the natural, elemental character of glass and, especially in addition with frosted glass insides, Ice-aesthetics can be empathised. Alongside it is also applicable for fields, where the least possible transparency is desired.

The LINIT special glasses **LINIT clarissimo**, **LINIT solar**, **LINIT cord**, **LINIT prismasolar** and **LINIT Ice** are protected by design registrations with effect in Germany.

Each of the above LINIT surfaces is produced in accordance with defined product specifications (available from www.lamberts.info or from our sales personnel). These individual product specifications are exclusively definitive with respect to product quality and control thereof.

**Aesthetics – the surface refinement**

By additional refinement steps facades with LINIT U-Profiled glass can aesthetically be arranged considerably more interesting and/or attractive. The Lamberts LINIT refinement is carried out exclusively on company owned, mostly Lamberts-engineered and adjusted to U-profiled glass particularities machinery, to be able to guarantee the well-known high quality to our costumers, for which Lamberts is known in the glass market.

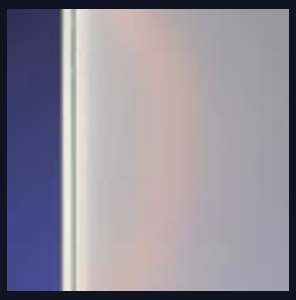
**Sandblasted**

At **LINIT matt**, a U-profiled glass with a sandblasted glass inside, the light is completely scattered and as a result diffusely dispersed, so in opposition to vectored transmittance no clear outlines occur. The hereby aroused soft, whitish shade of colour, gives an LINIT façade with comparatively low extra expenses an additional attractiveness and aesthetic lightness, especially then, when the glass façade is illuminated from behind.
The brilliance of such an façade can be enhanced furthermore, by using so called low Iron LINIT (see page 26) instead of standard glass: low iron LINIT , due to its lower iron content, reduces the common greenish tint of the standard glass considerably and hereby accentuates the optical appearance of the sandblasting.

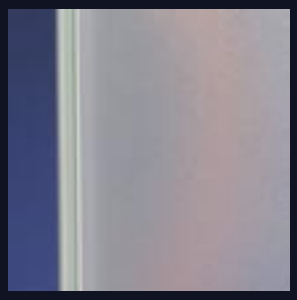
If desired, it is also possible to partially sandblast the LINIT glass shapes, and hereby creating more or fewer translucent surfaces in the glass wall.

Please observe the product specification **LINIT matt** (available at www.lamberts.info or from our sales personnel), which solely defines the product quality and control.
LINIT matt is also available in a toughened version.

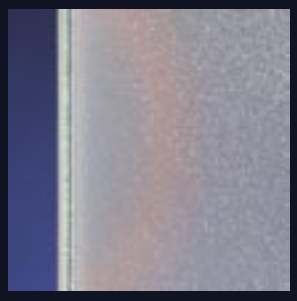
All LINIT glasses from the product range (see page 18) – without the coatings 1.7W, azur and solex - can be sandblasted up to a length of 7000mm.



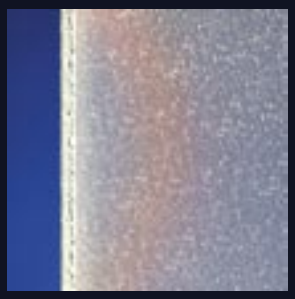
Structure:
clarissimo
Processing:
matt
(sandblasted)



Structure:
solar
Processing:
matt
(sandblasted)



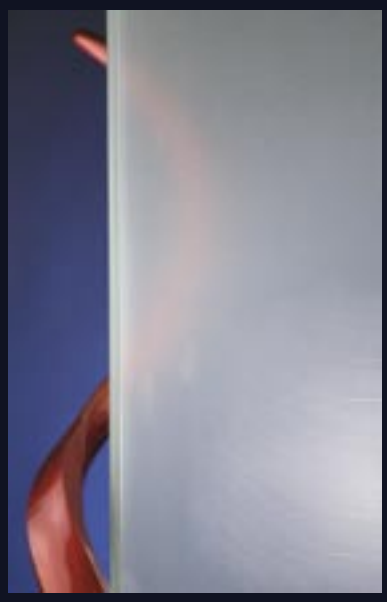
Structure:
504 perl
Processing:
matt
(sandblasted)

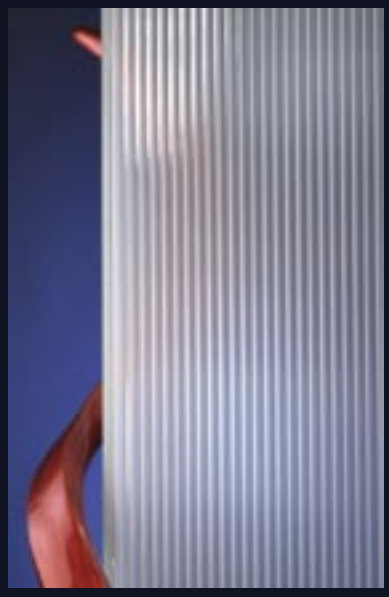


Structure:
Ice
Processing:
matt
(sandblasted)

Structure:
cord
Processing:
matt
(sandblasted)

Structure:
prismasolar
Processing:
matt
(sandblasted)

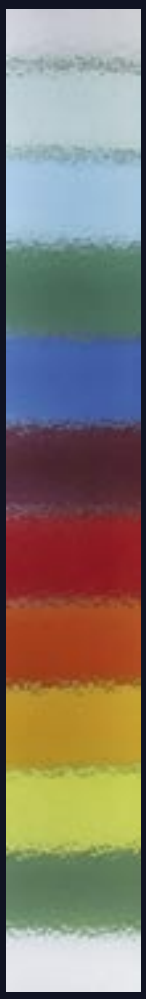




All images are done at studio conditions, which may differ from site conditions.
Production tolerances have to be taken into account as well.

# LAMBERTS LINIT

**LLINIT color**
**colour-enamelled**



By burning ceramic colours into the glass inside, the designer has the possibility, to create LINIT-facades in a multiplicity of RAL colour-shades (from white over orange to black), depending on the colour with more or less translucency.

Planers and constructors, who are especially appealed by the whitish tint of so called etched / Iced glasses, a special type of LINIT colour, on the basis of ceramic colours which simulates the appearance of acid-etched glasses, is available.

The aesthetic brilliance of the glasses, just like with **LINIT matt**, can be considerably raised by the use of low iron LINIT (see above at LINIT sandblasted).

The advantage of LINIT color, lays particularly in the fact, that the ceramic colour is burnt into the glass at a temperature of approx. 650 C°, and hereby in comparison to regular colour applications in low temperature ranges an extraordinary better durability, especially in association with UV radiation, is achieved.

A simultaneous toughening of the glasses raises the maximum resistance to temperature differences according to DIN EN 14179-1 of approx. 40 K to approx. 150 K, whereby the risk of glass breakage due to thermal stress, which occurs during regular application of colour is transferred to a temperature range, which is regularly not obtained in standard uses. Of course latter has to be checked by the planner in accordance with the individual requirements of the project.

If desired, it is also possible to partially enamel the LINIT glass channels, and hereby creating surfaces with more or less colour application in the glass wall.

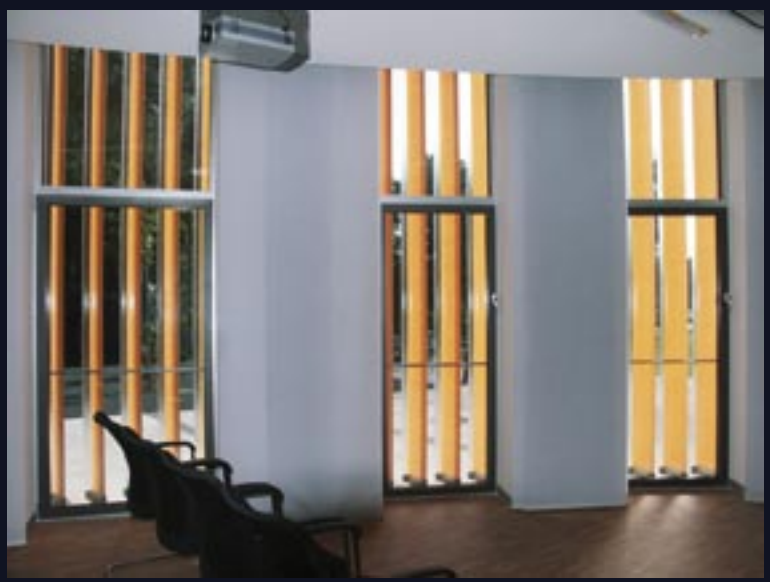
All LINIT glasses from the product range (see page 18) – without the coatings 1.7W, azur and solex and/or wire inlays can be colour enamelled up to a length of 7000mm.

Detailed information is consolidated in the product specification **LINIT color** (available from www.lamberts.info or from our sales personnel). Please observe, that solely the therein included specifications are relevant to us.

Furthermore be noted, that there is no European standard for **LINIT color** and **LINIT matt**. Therefore please check exactly the product specifications **LINIT color**, **LINIT matt**, the relevant construction law and individual requirements of the project (product specifications are available from www.lamberts.info or from our sales personnel).

Civic Center Parking / Santa Monica / USA
Moore Ruble Yudell Architects / Santa Monica / USA

**LINIT color applications**

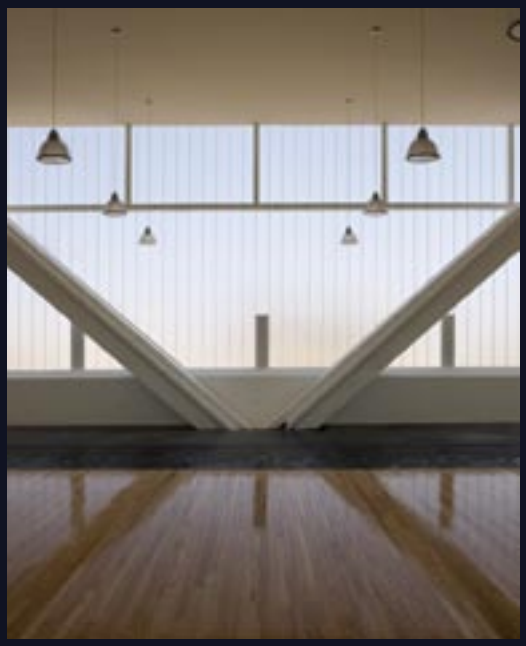
EVONIK / DEGUSSA Science to Business Center / Marl / Germany
HENN Architects / Munich / Germany

LAMBERTS

# LAMBERTS LINIT

**LINIT low iron**







top: Museum / maxMuseo / Chiasso / Switzerland Architects: Pia Durisch+Aldo Nolli / Chiasso / Switzerland
bottom: Centro Regional de las Artes de Zamora / Mexico

## LINIT low iron

**LINIT low iron**, which is produced in special production runs, is certainly the premium glass type in the whole U-profiled glass field.
Due to its further optimized low iron resource composition, **LINIT low iron** has a high light-transmission factor of approx. 90%, as well as radiation-transmission factor of approx. 88% (usual tolerances for rolled glass are to be observed).

Due to the fact that the glass melt of **LINIT low iron** is usually significantly paler, respectively less green than a standard production, **LINIT low iron** is preferably used by architects and designers, particularly in connection with refined surfaces (sandblasted **LINIT matt**, respectively colour enamelled **LINIT color**).

In these special production runs generally P26/60/7 low iron solar is produced for specific projects, respectively also on stock (sale as long as glass is available; reservations possible). Other low iron LINIT types are produced for special projects, following the requirements of the projects, starting on a minimum quantity, which depends on the specific glass type.
In the event of interest, please contact our sales staff.

## Physical properties

The following structural physics properties apply in general to LAMBERTS U-profiled glass:

Modulus of elasticity:
E = 60 000 - 70 000 N/mm²
Mohs hardness rating:
6 to 7 (feldspar 6; quartz 7)
Linear coefficient of expansion
when heated by 1° C:
75 to 85 . 10-7

specific weight:
2500 kg/m³
Thermal conductivity coefficient:
0,81 W/m²K
Thermal permeation resistance:
= 0,007 m²K/W

## Minimum Bending Tensile Strengths

A certain time ago, in Germany, a general building supervisory authorisation (AbZ) was issued for LINIT channel shaped glass no. Z-70.4-44. As well as many other details, this also specifies minimum values for bending tensile strengths. As not all LAMBERTS LINIT types in the product range are automatically produced in accordance with AbZ specifications, these minimum bending tensile strengths may vary depending on LAMBERTS LINIT type. In the event that the minimum bending tensile strength does not conform to AbZ requirements, the builder must obtain approval for the individual case.

For LAMBERTS LINIT types which do not constitute part of the product range and which are manufactured in special production, it is the responsibility of the builder, to check for bending fractures prior to ordering and installation, so that the minimum bending tensile strength can be defined. Analogue inferences, transferred from values available for an available glass type to a glass type derived from the same, are not acceptable.

> Current information regarding which LAMBERTS LINIT types display which bending tensile strengths is available from www.lamberts.info or from our sales personnel.

The planner, architect and glass installer are obliged to check the authorised allowable minimum bending tensile strengths for the glass type(s) to be used on the project in time. The static calculations resulting from this have to be carried out by them as well.

LAMBERTS

## Safety

Our special product, **LINIT tough**, is a thermically tempered channel shaped glass, which we offer as standard for all LAMBERTS LINIT types without wire inlays, up to a maximum production length of 7000 mm (!).

This provides the following advantages for planners and users:

- Thermally toughened **LINIT tough** meets the requirements laid down for cast glass in the DIN EN 14179-1 for tempered safety glass, with regard to fracture behaviour (number and size of fragments) (analysis of structure after fracture according to, see product specification **LINIT tough**).

- Use in forward-standing facades or back-ventilated exterior walls, in accordance with DIN 18516 part 4

- In accordance with DIN EN 14179-1, significantly increased thermal shock resistance of approx.150 K, compared to non-tempered glass (approx.40 K) such that: in the standard case, there is no risk of fracture due to increased thermic stresses such as e.g. from solar, absorber walls, or particularly in connection with transparent heat insulation.

- Safety against ball throwing in compliance with the DIN 18032 Part 3 (handball and hockey ball test):
  P 23/60/7 tough and P 26/60/7 tough, double-glazed installation up to a maximum length of 7000 mm
  P 23/60/7 and P 26/60/7, double-glazed installation up to a maximum length of 6000 mm (installation acc. test set-up with buffer profiles).

  Result:
  Improved properties in special-purpose areas such as sports halls, for example.

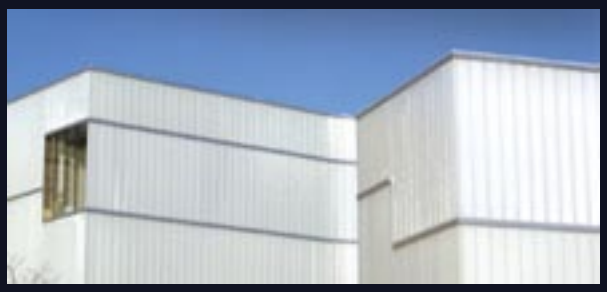
In order to minimise the risk of fracture from nickel sulphite inclusions, in accordance with the latest technological discoveries, a

**Heat soak test**

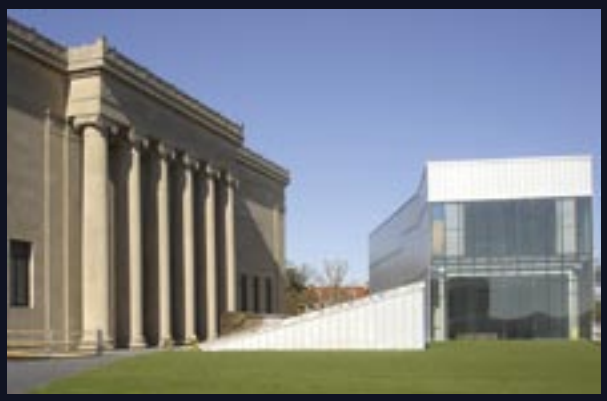
in the style of the most stringent specifications of the German Construction Standards and Codes, Attachment 11.11 implemented in a heat soak furnace specially designed for LAMBERTS LINIT tough with external control at regular intervals.

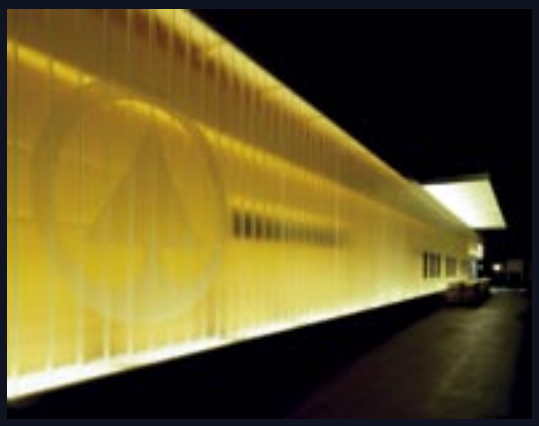
Particularly with heat soak tests for shaped glass, the customer must observe very specifically that a heat soak oven for flat glass is not necessarily suitable for channel shaped glass, which poses special requirements on the oven used due to its shape and other properties. Therefore, the heat soak oven must be provably designed for these specific U glass requirements.

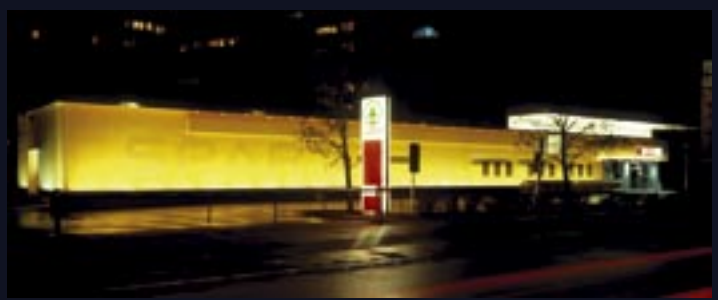
Detailed information is summarised in the **LINIT tough** product specifications (available from www.lamberts.info or from our sales personnel). Please observe that only the specifications contained therein are definitively applicable to us. Furthermore, be advised that **LINIT tough** requires the builder to gain approval for use in the individual case. Test reports and product specifications generally required for this are available from our sales personnel.



**LINIT tough applications**







top: Nelson Atkins Museum / Kansas City / USA  Steven Holl Architects / NY / USA
middle: Restaurant @55 / Dortmund / Germany  Construction: Zompras / Moers / D
bottom: Supermarket / Linz-Dornach / Austria  Architects: Archinauten / Linz / Austria

LAMBERTS

## Shaped Glass with Wire Inlays

On request by the customer, various shaped glasses are produced with wire inlays. Please note, however, that wire glass does not constitute safety glass and may therefore not be used in Germany for safety-relevant areas. These types of glass do not provide sufficient road safety according to EN 12600 and – as with non-tempered, channel shaped glass – must be removed from circulation areas and direct access (technical directive of the German glaziers trade text 8, and confederation of accident insurances: GUV 56.3 building and equipment safety).

It is imperative that you read our product specification D for shaped glasses with wire inlays (available from www.lamberts.info or from our sales personnel).

## Safety against ball throwing

The non-toughened Lamberts LINIT Types P 23/60/7 and P 26/60/7 successfully stood up to the ball throwing test in compliance with the DIN 18032 Part 3 in a double-glazed standard installation with buffer profiles, with a length of 6000 mm (for test set-up see test certificates and also page 50).

The thermally toughened Lamberts LAMBERTS LINIT Types P 23/60/7 and P 26/60/7 successfully stood up to the handball and hockey ball test in compliance with the DIN 18032 Part 3 in a double-glazed standard installation with buffer profiles, with a length of 7000 mm (for test set-up see test certificates and also page 50).

If there are no structural load restrictions to be observed these LAMBERTS LINIT types can be installed up to a maximum length of 6000 mm and 7000 mm respectively.

## Thermal Insulation

LAMBERTS LINIT U-Profile Glass attains the following U values:

| LAMBERTS LINIT Inner shell | LAMBERTS LINIT Outer shell | THI | Type of glazing | U-Value in W/m²K |
|---|---|---|---|---|
| LINIT uncoated | | | single glazing | 5,7 |
| LINIT uncoated | LINIT uncoated | | double glazing | 2,8 |
| LINIT uncoated | LINIT solex coating | | double glazing | 2,8 |
| LINIT W1.7 coating | LINIT uncoated | | double glazing | 1,8 |
| LINIT W1.7 coating | LINIT solex coating | | double glazing | 1,8 |
| LINIT uncoated | LINIT uncoated | ca. 40 mm | double glazing | approx. 1,5 |
| LINIT W1.7 coating | LINIT uncoated | ca. 40 mm | double glazing | approx. 1,2 |

Please note that for all LAMBERTS LINIT glass the relevant product specification (available from our sales personnel) must be observed at all times! Here particularly the product specification "Coated LINIT U-Profile Glass" for solex and W1.7 coating.

The values in conjunction with transparent thermal insulation (TWD) are merely approximate values that are dependent on the respectively used transparent thermal insulation material.
Glasfabrik LAMBERTS cannot guarantee these values!
Exact data must be obtained from the respective TWD manufacturer!
The specifications of the TWD manufacturer must be strictly observed in the design and installation!


**LINIT in combination with THI in Use**


top: Mediacenter / Waterloohain / Hamburg / Germany
Architect: Carsten Roth / Hamburg / Germany
bottom: A Private Home in Moscow / Russia

LAMBERTS

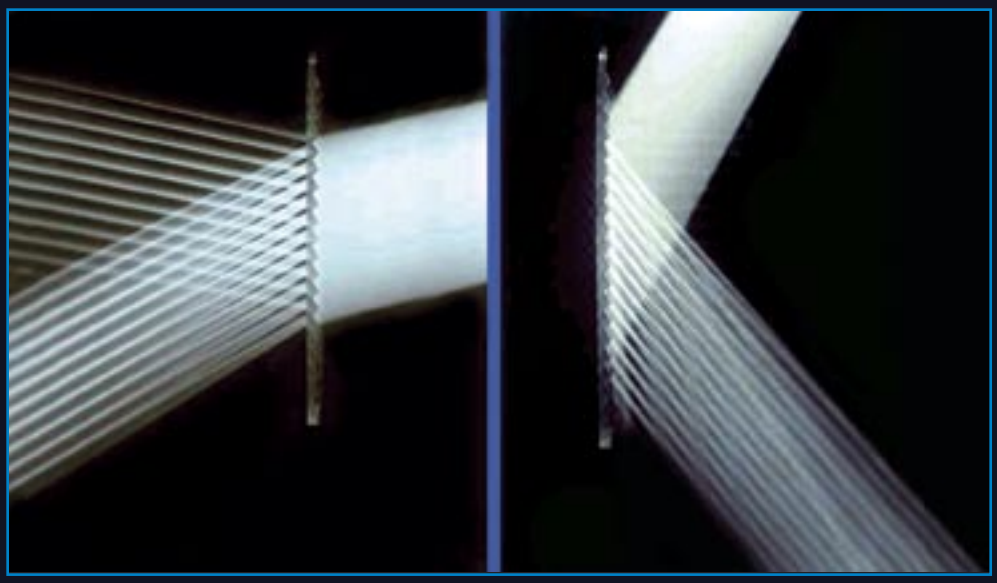
# LAMBERTS LINIT

**Seasonal shading**

LAMBERTS LINIT prismasolar is a surface developed especially by LAMBERTS which provides extraordinary qualities: Thanks to its precisely-determined prismatic structure, it is possible for a high proportion of the solar radiation in winter to pass trough the glazing into the interior of the building: by contrast in summer a high proportion of the solar radiation is reflected back to the outside.

The static seasonal shade, which generally has a long durability due to use of the material glass, helps to make the energy permeation of facades both more controllable and more efficient, depending on the time of year and the associated differences in energy requirements.

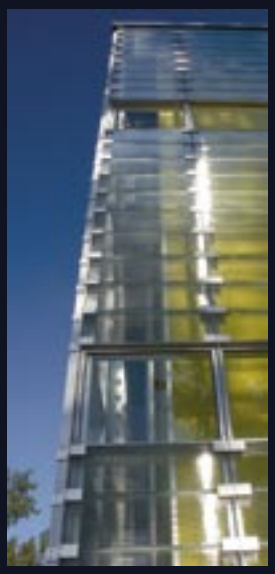
The Prismasolar Functioning Principle:

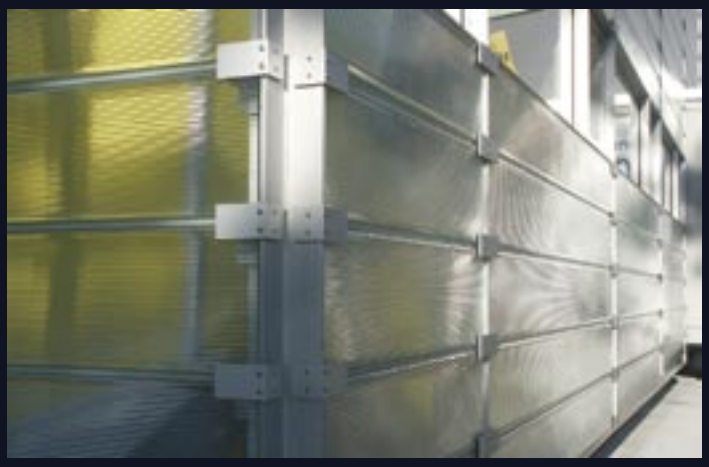


**Winter Situation** **Summer Situation**

The steeper the light angle (in summer) and thus the tendency towards internal overheating, the more it encompasses the area automatically shifted by the glass: a large proportion of the light-heat radiation is then thrown back outwards by reflection. When the angle of light is flat, a further useful side effect is the improvement in lighting in the depths of the room space.

**LINIT prismasolar in Use**





ads Office Center / Fürstenfeldbruck / Germany
Architects: ads-architektur / Fürstenfeldbruck / Germany

LAMBERTS

# LAMBERTS LINIT

**Sun protection**

The solar shading coating **LINIT solex** can significantly contribute towards keeping out undesired sunlight. Please always observe the relevant product specification "Coated LINIT U-Profile Glass" for coated glass (available from www.lamberts.info or from our sales personnel), according to which they are produced. These individual product specifications are exclusively definitive for the definition of product quality and control of **LINIT solex**.

**Colour enamelled**

A contribution to sunscreen can also be achieved with **LINIT color**, the colour enamelled LINIT U-Profiled glass (see page 24), which, depending on the colour and the translucency level, bear different light transmissions and energy-gains. Planers and constructors, who are especially appealed by the whitish tint of so called acid-etched / frosted glasses, a special type of **LINIT color**, on the basis of ceramic colours which simulates the appearance of acid-etched glasses, is available.

**Sandblasted**

At **LINIT matt**, the LINIT U-profiled glass with a sandblasted glass inside, the light transmission and the energy-gain, in comparison with standard U-profiled glasses without Sandblasting can be reduced.

**Light Channelling**

The standard LINIT patterns provide excellent light diffusion and have a special creation effect.
The **THI concept** combines U-profiled glass with a special surface and the TIM capillary insert, which not only provides extra thermal insulation but also a particularly soft and deep diffusion of the light within the spatial area.
The **LINIT prismasolar** system, patented by Lamberts, has the effect of deflecting the light thanks to its special optical properties, which means that, in the appropriate arrangement, it provides a specific improvement in spatial depth lighting.

**Optimised Use of Solar Energy**

The individual uncoated LAMBERTS LINIT glass channel can achieve a high light transmission of up to 88 % due to its high quality raw materials.

Due to the further optimised low iron composition of its raw materials, the **LINIT low iron**, which is manufactured specially, allows a high level of light transmission up to 90 % and a high level of radiation transmission of approx. 88 % (standard production tolerances for moulded glass are to be observed). A further aesthetic effect is that the molten glass for **LINIT low iron** is generally significantly lighter than in standard production, which means that its use is favoured by architects.

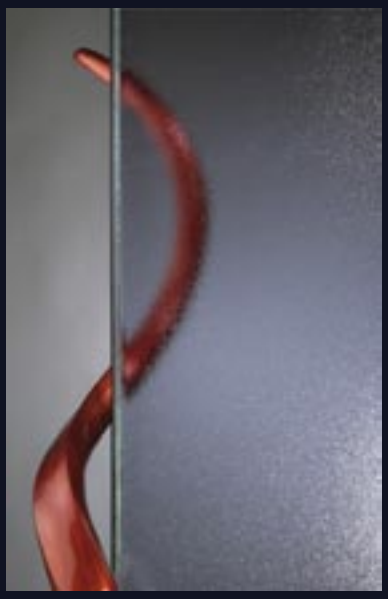
In this special production, only P 26/60/7 low iron solar is produced to stock (sales where stocks are sufficient; reservations are possible). Other low iron LAMBERTS LINIT types are produced for special projects with the specific product features required, from a minimum requirement of approx. 2.000 $m^2$.

As an ecological, attractive and efficient solar concept, the **LINIT with THI** idea combines the high performance **LINIT low iron** solar special U-profiled glass with efficient and aesthetic, transparent heat insulation materials.

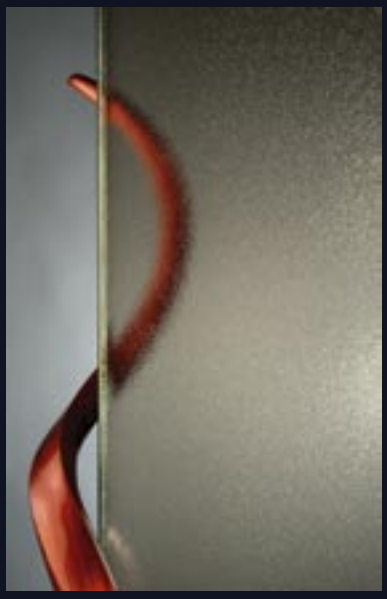
**Soundproofing**

LAMBERTS LINIT glazing offers the following sound insulation values in different design structures in compliance with the DIN 4109: 1989-11:
Triple glazing 26/60/7 - 26/60/7 - 26/41/6
Rw = 57dB; calculated sound insulation value Rw,r = 55 dB
Double glazing 26/41/6 - 26/41/6
Rw = 42 dB; calculated sound insulation value Rw,r = 40 dB
Double glazing 50/41/6 - 50/41/6
Rw = 42 dB; calculated sound insulation value Rw,r = 40 dB
Double glazing 26/60/7 - 26/60/7
Rw = 43 dB; calculated sound insulation value Rw,r = 41 dB
(for test set-up refer to the test certificates)
More detailed information on the test set-up is available from our sales personnel.

**Surface:**
**504 perl**
**Coating:**
**azur**



**Surface:**
**504 perl**
**Coating:**
**solex**



**Surface:**
**504 perl**
**Coating:**
**W 1.7**

All images are done at studio conditions, which may differ from conditions on location. Production tolerances have to be taken into account as well.

All images are done at studio conditions, which may differ from site conditions. Production tolerances have to be taken into account as well.

LAMBERTS

## 3. Aluminium

Concept 60 (building depth: 60 mm) and concept 83 (building depth: 83 mm), which differ considerably with respect to building depth, are available as standard. The decision of which building depth to use is solely dependant on the selection of the type of LAMBERTS LINIT glass (and its specific flange height). The term "aluminium concept" is used exclusively to mean the aluminium profiles supplied by LAMBERTS glass factory. Other items, e.g. such as fixing media and sealants are provided by recognised specialist firms and therefore do not constitute part of the aluminium concept.

Our exclusive, definitive product specifications for aluminium and accessories are to be strictly observed.

## 3.1. Aluminium Frame Profiles

The bottom profiles (UPR) are available either with or without moulded windowsills of various reaches. Some of the top and side profiles (OSP) are available in a variety of designs (normal, reinforced, extended), for special requirements.

There are also special profiles available for special glazing, e.g. such as push-in system, shed roof glazing, horizontal glazing and round glazing. In principle, in the case of special structures and a certain level of requirement, it is also possible to develop new profiles – if the schedule and budget allow.

### Heat Insulation

Most aluminium frame profiles are available either with or without thermal break.

### Surface Design

All profiles can be produced in plain-pressed, anodised and RAL powder coated design. It is also possible to produce special colours, on request. The guarantee is in accordance with the manufacturer's specifications.

### Quality

All aluminium framing profiles provided by LAMBERTS are manufactured in accordance with the strictest quality criteria.

In addition to all-aluminium framing profiles, thermal insulating profiles developed by Lamberts offer some particularly significant advantages thanks to their GF-polyamide cores:

- Temperature resistance up to 200°C !
- Subsequent coating or painting of the profile is simplicity itself.

### Aesthetics: Curved Profiles

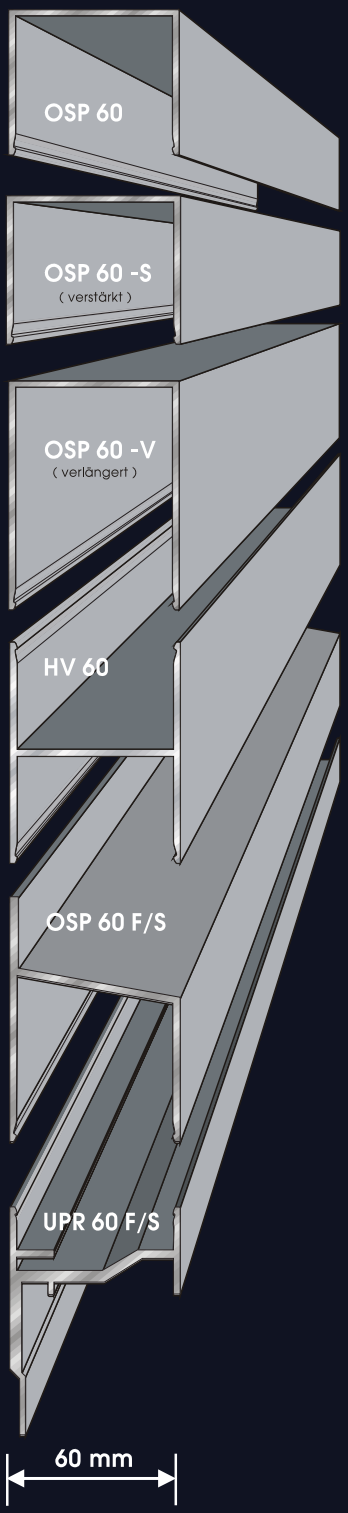
Round glazing is well liked for use as a particularly interesting aesthetic architectural variant. Some of Lamberts aluminium frame profiles can be curved for this purpose – from a minimum quantity of 20 profile rods. Obviously, bottom profiles can only be curved without moulded windowsills. If desired, the curved profiles will be coated afterwards.

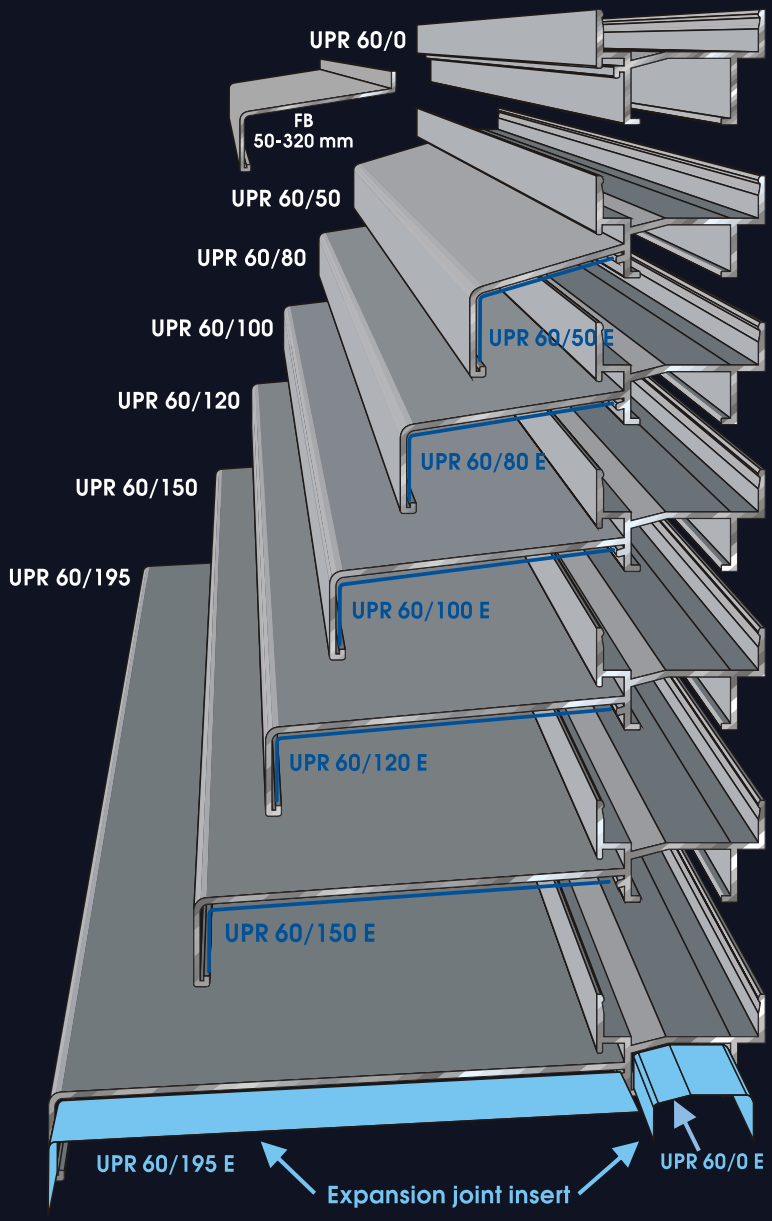
Please note that production options are limited to various minimum radii, depending on the aluminium frame profile.

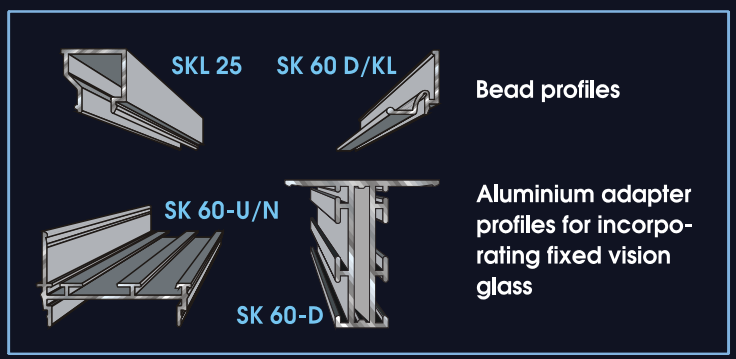
For a specific project, please discuss with our sales department in good time!

# Alu-Series 60

## All-aluminium



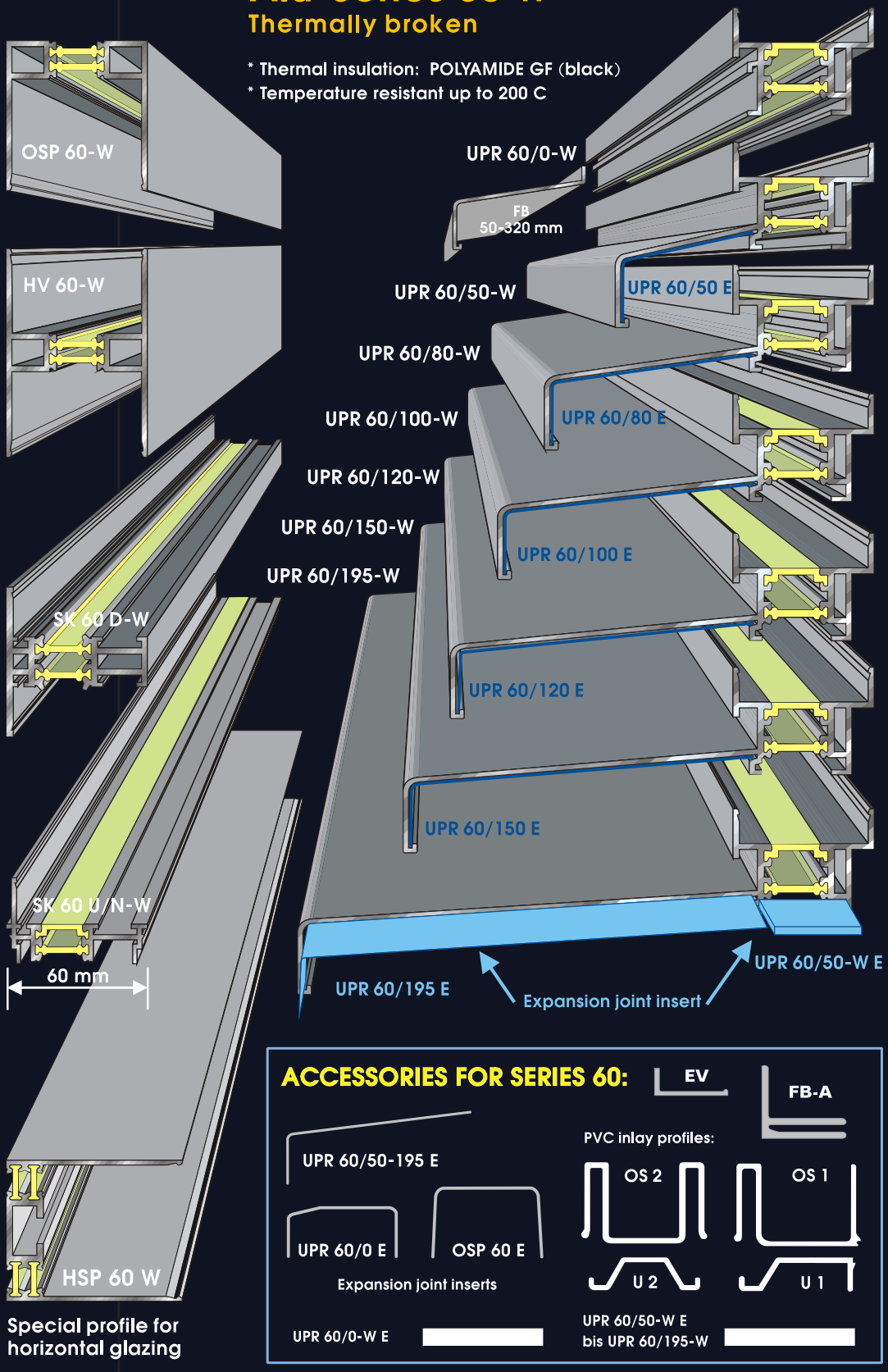




LAMBERTS

# Alu-Series 60 W

## Thermally broken

* Thermal insulation: POLYAMIDE GF (black)
* Temperature resistant up to 200 C

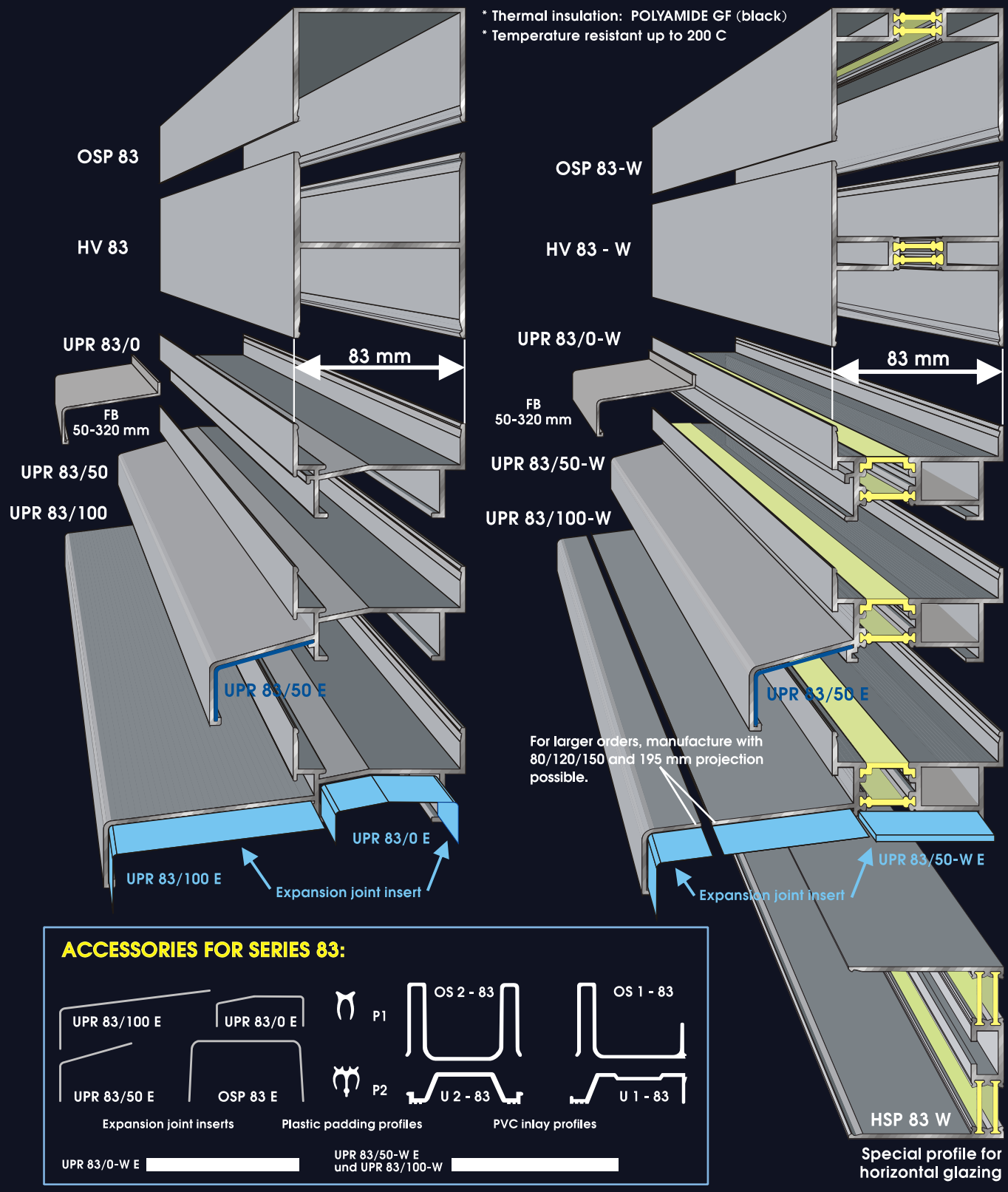



## ACCESSORIES FOR SERIES 60:

## Alu-Series 83
All-aluminium

## Alu-Series 83 W
Thermally broken

* Thermal insulation: POLYAMIDE GF (black)
* Temperature resistant up to 200 C




### ACCESSORIES FOR SERIES 83:

## 3.2 Aluminium Vents and Elements

In principle, the following aluminium window types are available: swing leaf, tilting leaf, folding leaf, rotating leaf, rotating-tilting leaf. Additionally, aluminium (single or multi-piece) elements with various combinations of leaf and fixed area are available. Likewise, it is also possible to manufacture single or multi-piece door elements. All leaf/element types from LAMBERTS can be produced with a wide range of connections.

### Dimensions

Centre pivots are available in stock dimensions (matched to the individual web widths of LAMBERTS LINIT profile construction glass types plus joints), and in fixed dimensions for the two LINIT installation systems. All other vents and elements are manufactured exclusively order-related in the appropriate fixed dimensions for the two LAMBERTS LINIT construction depths.

### Heat Insulation

All vents and elements can theoretically be manufactured with or without thermal insulation.

### Heat Insulation

By analogy with aluminium framing profiles, vents and elements can also be provided in plain pressed, anodized, and RAL powder coated surface finishes. It is recommended that the vent and framing profiles, if anodized and powder-coated, should undergo surface treatment by the same company in order to avoid any serious colour variations.

### Functionality

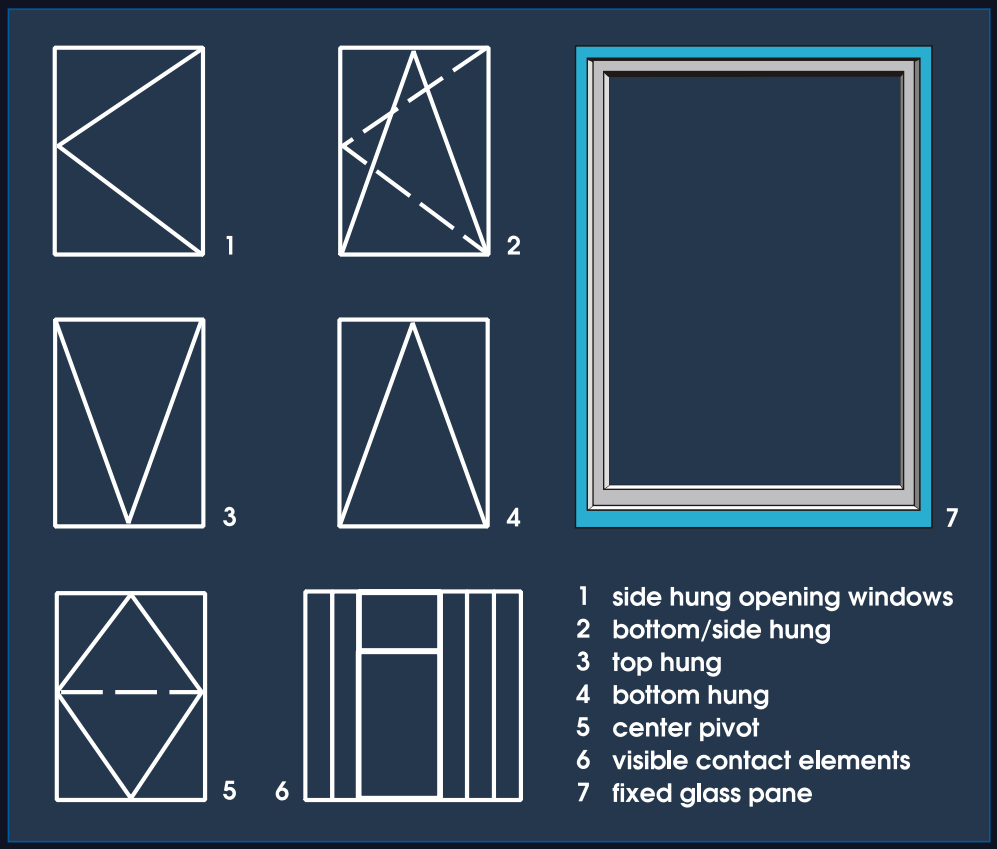
The loads arising from the use of windows, doors, or even window elements must be born by a self-supporting structure, such that these components do not exert any stress on the shaped glass. Therefore, when integrating the windows and elements into the glass field, it is essential that builders take supporting safety measures during fixing. These must be clarified by the planner and glazier prior to placement of the order!

### Guarantee

The guarantee for windows, doors, elements etc. supplied by us is in accordance with the specifications of our pre-suppliers. For power, metal-fitting and wearing parts, and for electronic drives, a guarantee time of 6 months after delivery shall apply.

The guarantee for the various surface designs differs depending on installation situation or installation location, as with aluminium frame profiles and we grant this guarantee in accordance with the manufacturers' specifications. If in doubt, please contact our sales department.

## Aluminium Vents




1 side hung opening windows
2 bottom/side hung
3 top hung
4 bottom hung
5 center pivot
6 visible contact elements
7 fixed glass pane

## Installation variants (examples)

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## 4. Glazing Technique

### Preliminary Remarks

The selection of LAMBERTS LINIT glass types is mainly influenced by the static requirements of the respective application case. Should several LAMBERTS LINIT types be suitable for the requirements of the building, according to static calculations, then the planner can – of course – choose the one which he/she finds aesthetically most appealing. National building regulations must be strictly observed.

The following specifications are usually required, as a minimum, for the builders' static calculations: building type (open, closed building etc.); dimensions of glass areas; arrangement of glass areas within the building (specifying peculiarities which may influence static calculation, if applicable); lay type (vertical or suitable wall / vertical or horizontal arrangement of shaped glass / double or single-shell lay / with or without seal), desired maximum installation lengths; wind / suction / snow load etc.; other loads/stresses.

All building regulations must be strictly observed at all times. Furthermore, compliance with our work instructions (available from www.lamberts.info or from our sales personnel) is also required. In the event of contradictory specifications, building regulation directives shall always take precedence.

For LAMBERTS LINIT channel shaped glass in Germany, a general building supervisory authorisation (AbZ) has been issued with no. Z-70.4-44. This contains the basic requirements of the German institute for architectural technology (Deutsches Institut für Bautechnik – DIBt) in Berlin both for the glass and the structure. AbZ may only be used under strict observance of these requirements.

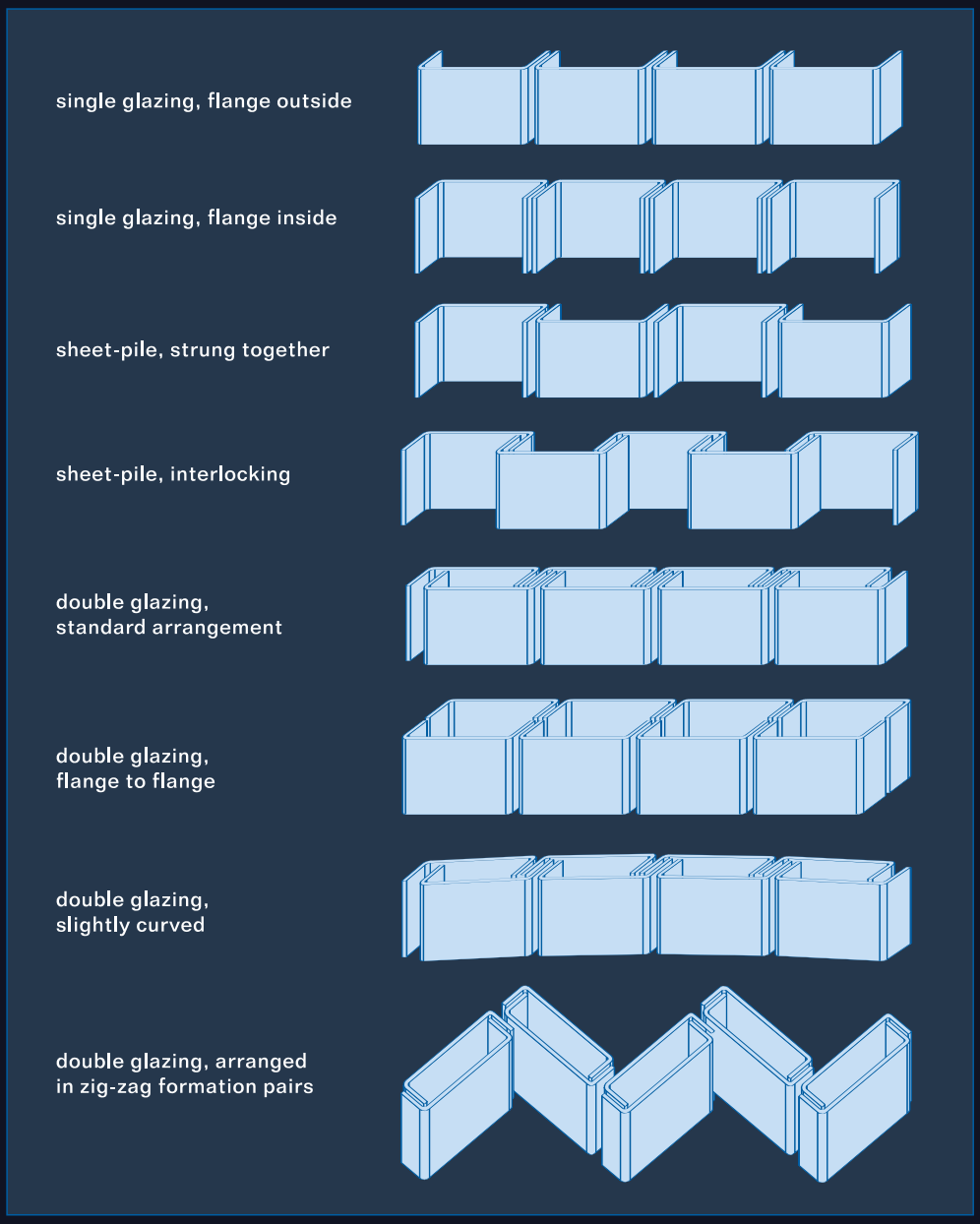
For LAMBERTS LINIT channel shaped glasses and structures that completely fulfil the AbZ, LAMBERTS has had a type static calculation checked by the Würzburg LGA. This applies only in conjunction with aluminium frame profiles from Lamberts. The requirements of the Würzburg LGA must be strictly observed when using the type static calculation.

For any deviation (where glass and/or structure do not comply with AbZ requirements) the builder must obtain an individual case authorisation for the specific project.

It must be clear to each architect, planner and glazier that the AbZ does not cover all designs/structures and equally that the AbZ does not apply for all LINIT types (see above). If in doubt, the builder must clarify the extent of AbZ applicability or requirement for individual case authorisation prior to commencement of construction.

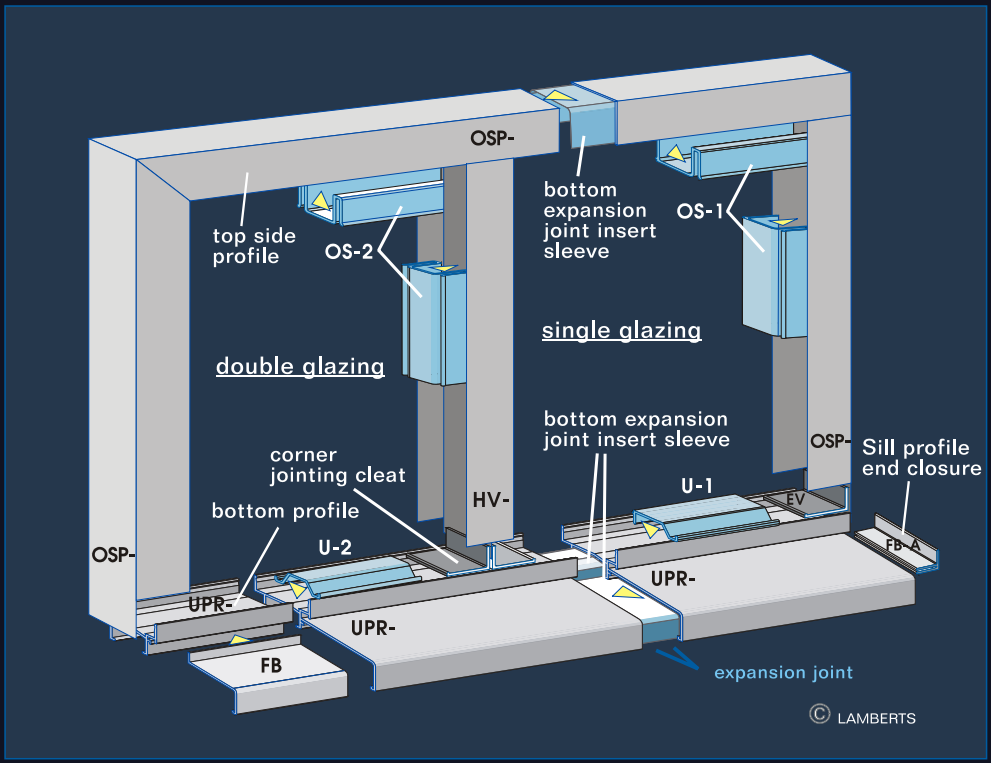
To facilitate procedures and provide further information for planners and users, the general building supervisory authorisation (AbZ) and the Würzburg LGA type calculations based thereon may be requested as special printouts from our sales personnel.

## 4.1 LINT glazing technique




The relevant national construction regulations relating to statics (among others, also those relating to corner areas) and design are to be observed in every instance of planing and implementation.

## 4.2 Installation of the Aluminium Frame

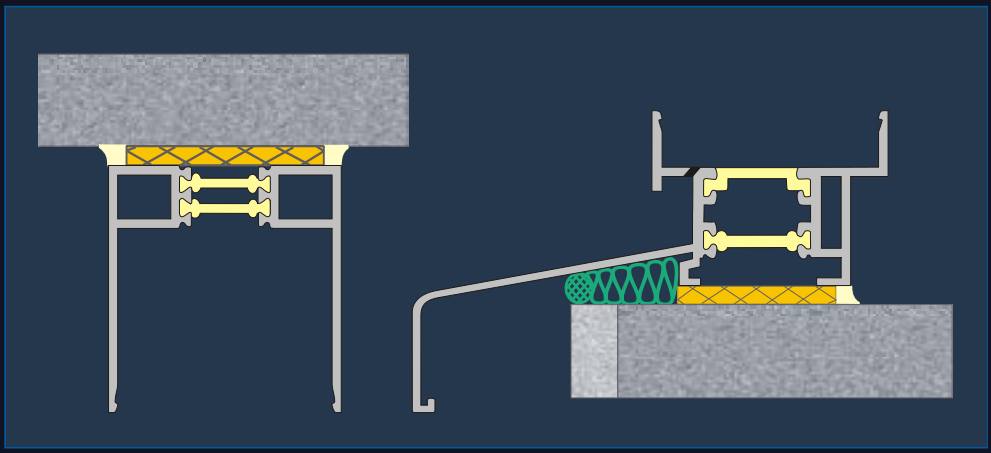



**Selection of Frame Profiles**

In principle, a distinction is made in terms of standards between the LINIT Series 60 (installation depth: 60 mm) and the LINIT Series83 (installation depth: 83 mm). The allocation of System 60 or 83 is based on the flange dimensions of the glass profiles:

For the LAMBERTS LINIT- Profiles P 23 - P 26 - P 33 - P 50 ALU-Series 60 + 60 W
For the LAMBERTS LINIT- Profiles P 23/60/7 - P 26/60/7 - P 33/60/7 ALU Series 83 + 83 W

## 4.3 Frame Fixing



Taking structural movements into consideration, the frame must be anchored in the structure using suitable fixing and grouting materials.
Once any uneven parts of the connection surfaces have been smoothened out, the frame must be connected correctly to the structure body. The frame must be able to absorb the loads imposed by the glazing, and transfer them to the structure. The securing elements must be reliable, durable, and free of rust, and account must be taken of static requirements.

Statically sufficient fixing points must be applied on each side, fitted via the completely aluminium part of the frame profile. Depending on installation requirements, the frame must be sealed to the building. The possibility of damage by building subsidence or changes in dimensions of the wall openings must also be carefully checked.

Under no circumstances may forces be transferred from the frame to the U-profiled glass!

Fixing media must not give rise to harmful interplay on the frame material, e.g. such as contact corrosion. Thus, aluminium and steel particularly must not come into contact with one another, but rather be permanently separated by suitable means, e.g. such as plastic plates or coatings. Aluminium frame connecting media may be in aluminium if these meet the static requirements.

Securing procedures are to be carried out in such way that the components can expand and contract unhindered as temperature changes.

In order to avoid long-term effects of precipitation water and/or condensation on the frame profiles, the bottom aluminium framing profile, if not already designed in this manner, is to be formed in such a way that, in extreme cases, drip water which may have collected can be drained away to the outside.

It is advisable for appropriate drainage arrangements to be provided in the frame profile, as a function of the individual web widths of the LINIT U-profiled glass types. The drainage apertures are to be provided with filters in order to prevent the penetration of dirt into the glazing.

Changes in length resulting from temperature fluctuations are to be taken into account when fitting connecting joints. Conecting joints are to be sealed in such way that water cannot penetrate, and draughts will be avoided.
To achieve this, expansion joint profiles and thrust elements should be fitted carefully onto the connecting joint covering. The profiles for the joint covering are pushed in, over, or under; the expansion joints are to be carefully sealed.

Selection and application of the fixing and grouting media must be undertaken professionally, in accordance with the relevant situation and conditions with respect to building regulations. Compliance is required with the instructions and recommendations of the fixing media and sealant manufacturers and other specialist companies.

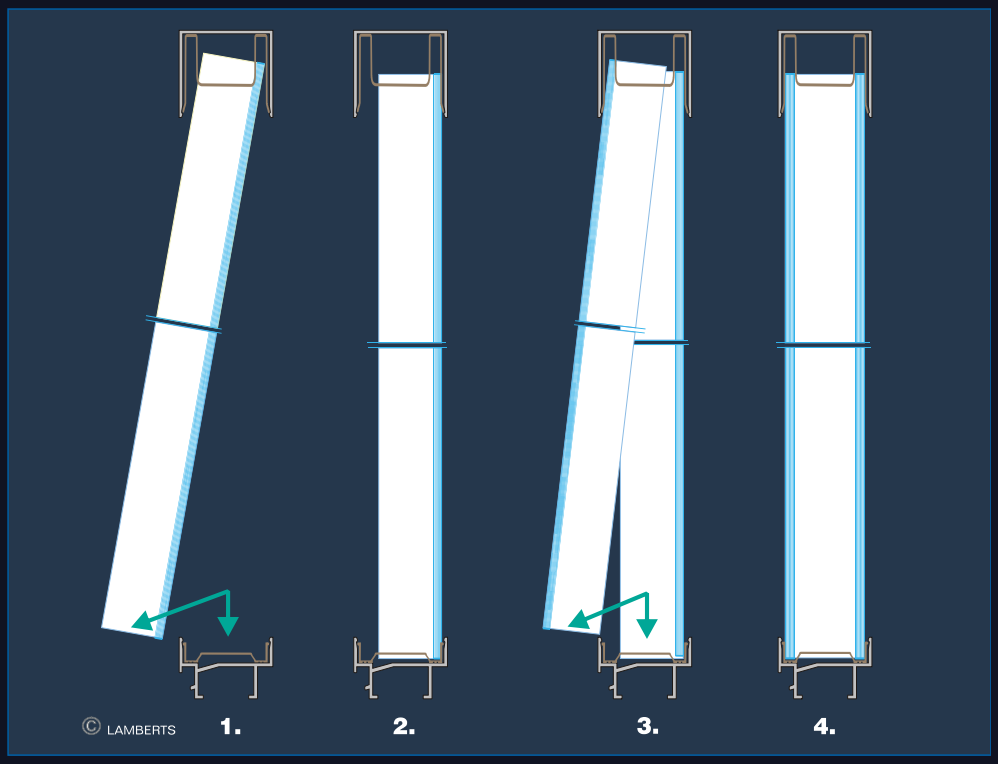
## 4.4 Assembling the glass channels

When handling LINIT channel glass, clean gloves should be used at all ti mes to avoid visible smears on the surface of the glass. When installing the glass, it must be ensured that dirt or damp neither is nor can be on the coated surface (internal side of the U profile).

For double-shell glazings, it must also be noted that pad profiles (shore A hard ness from 70 +20/-10) are set on the flange in order to avoid glass-glass contact and allow optimum strength transfer between the glass channels. Particular care must be taken to ensure that open glass joints are sealed immediately after ad justment of the glass channels.

The fixed aluminium profiles are provided with insert profiles or blocks to prevent direct contact between glass and aluminium. LINIT profile glass is then inserted into the surrounding aluminium profile:

**Inserting LINIT U-Glass into the Aluminium Frame Profiles**




1 Carefully introduce the LINIT U-profiled glass diagonally into the top framing profile OSP, and bring the glass into a vertical position
2 Slowly and carefully lay glass onto the plastic insert (inlay profile)
3.+4. Repeat the process with the second glass channel

**Replacement of broken glass channels**

In the event of glass breakage in the façade, the damaged pieces can be removed by applying this procedure in the reverse order, and replaced by new glass channels.

## 4.5 Sealing

**Frame to the Base Structure Sealing**

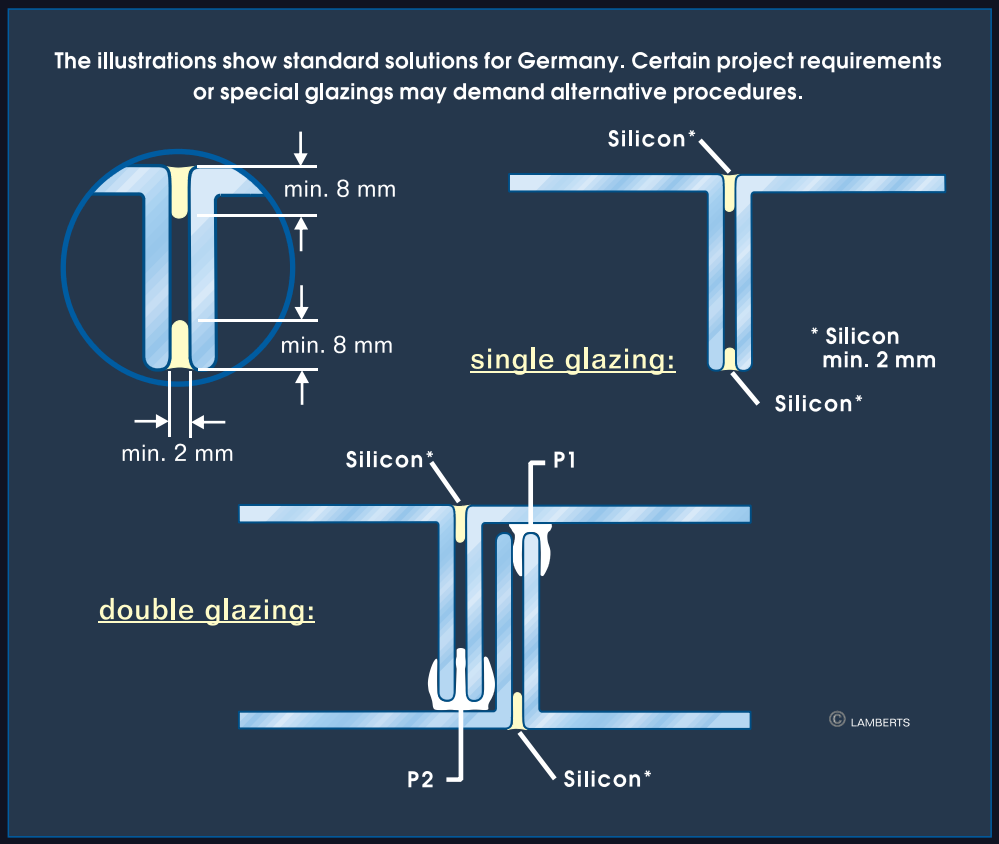
The joints between the structure and the aluminium framing profiles are to be applied in accordance with the relevant building regulations.

For application in Germany, in accordance with DIBt Berlin general building supervisory authorisation (AbZ) no. Z-70.4-44, please strictly observe that various authorised bending tensile strengths are applied depending on whether the shaped glass walls are sealed or not. According to DIBt Berlin, sealant category E sealants as per DIN 18545-2 are to be used for sealing joints. The absolute minimum dimensions are to be taken from AbZ attachment 3.

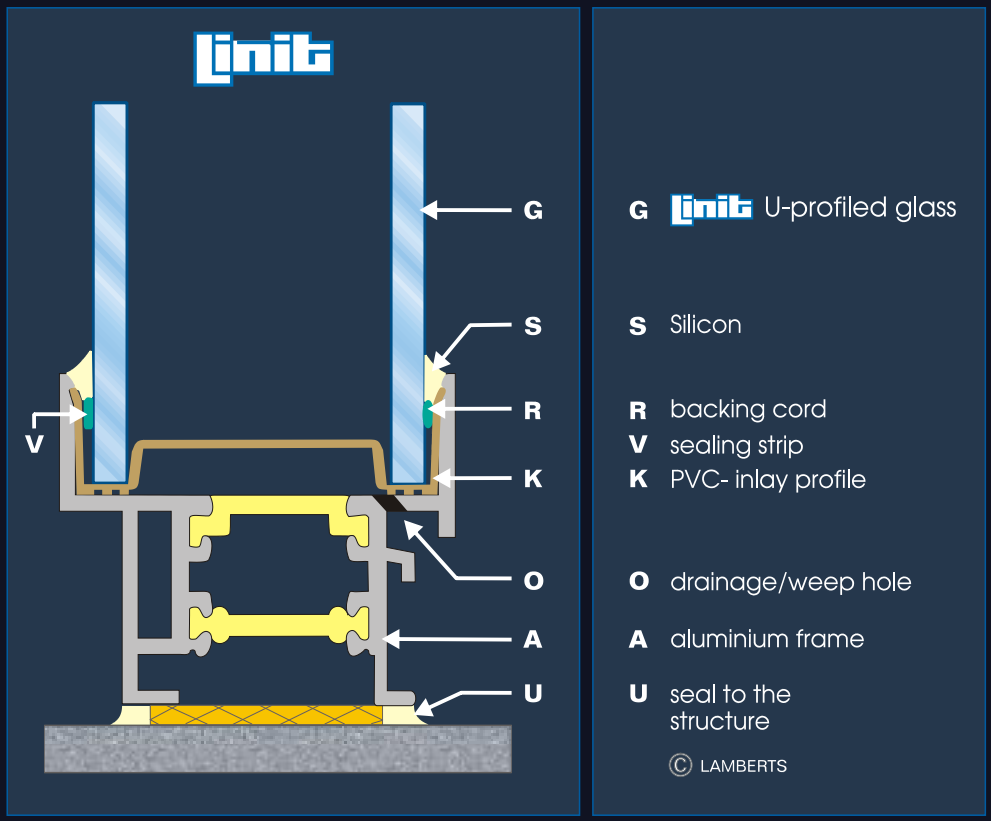
The following illustrations show standard solutions for Germany. Certain project requirements, specially in other climatic surroundings, or special glazings may require alternative procedures. In every case, the instructions of the sealant manufacturer must be observed. Possible negative interplay of sealants with glass or aluminium must be checked and eliminated.

Glazings must always be suitably sealed, such that harmful glass channels cannot fall down. This applies particularly to single-shell glazings. Under no circumstances should non-toughened glass be used for glazings with unsealed intermediate spaces.

## Glass to Glass Sealing




## Glass to Frame Sealing




Use of sealants respectively in appropriate manner and dimensions!

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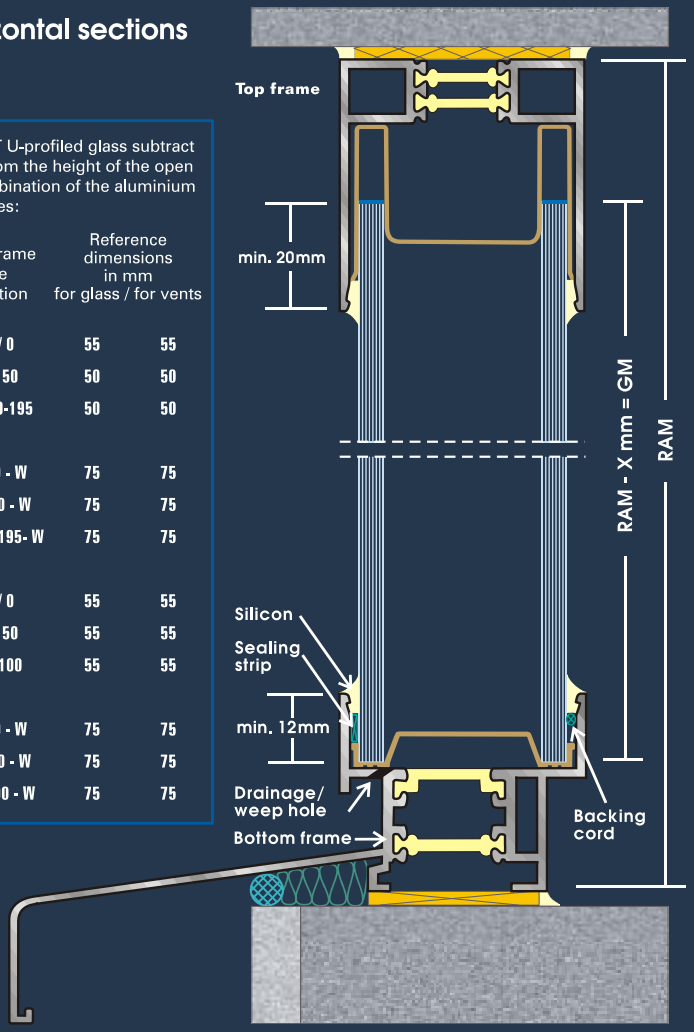
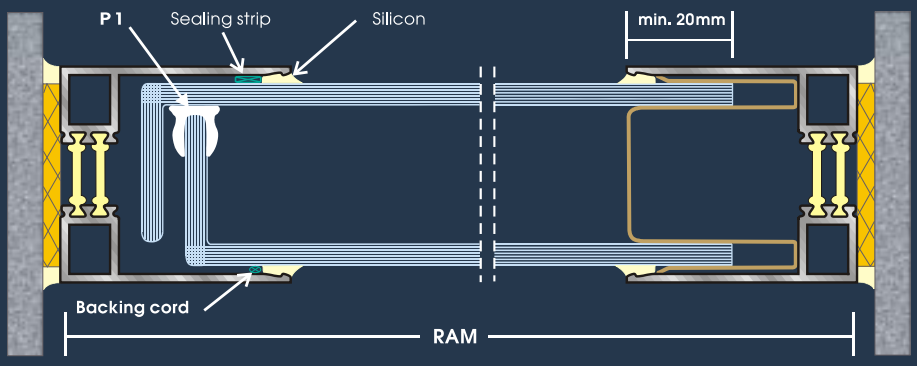
## Vertical and horizontal sections
(typical)

To get the final sizes of LINIT U-profiled glass subtract the following dimensions from the height of the open area, depending on the combination of the aluminium profiles:

| Top frame Profile designation | Bottom frame Profile designation | Reference dimensions in mm for glass | for vents |
|---|---|---|---|
| OSP 60+ OSP 60 S | UPR 60 / 0 | 55 | 55 |
| OSP 60+ OSP 60 S | UPR 60 / 50 | 50 | 50 |
| OSP 60+ OSP 60 S | UPR 60 / 80-195 | 50 | 50 |
| OSP 60 W | UPR 60 / 0 - W | 75 | 75 |
| OSP 60 W | UPR 60 / 50 - W | 75 | 75 |
| OSP 60 W | UPR 60 / 80-195- W | 75 | 75 |
| OSP 83 | UPR 83 / 0 | 55 | 55 |
| OSP 83 | UPR 83 / 50 | 55 | 55 |
| OSP 83 | UPR 83 / 100 | 55 | 55 |
| OSP 83 W | UPR 83 / 0 - W | 75 | 75 |
| OSP 83 W | UPR 83 / 50 - W | 75 | 75 |
| OSP 83 W | UPR 83 / 100 - W | 75 | 75 |




U-profile glass must have a sufficient edge cover where the ends of the glass locate within the aluminium frame so that the stability of the glazing will be secured for the long term.
The minimum edge cover for the glass is:
For vertical installation: Bottom frame min. 12 mm/top frame min. 20 mm
For horizontal installation: Side frame min. 20 mm.
Special constructions or requirements of buildings can lead to other (higher) minimum edge cover!

Should it be necessary to cut individual glass tracks lengthways within a shaped glass wall, then the cut edges must be set against the wind load in continuous linear inlay profiles, as per AbZ no. Z-70.4-44, section 2.1.3.

The principle applies to all special glazing that the manufacturer must be con sulted before the specific application is planned or put into effect. The relevant national and international construction regulations and have to be exactly observed in every instance of planning and implementation.

## 4.7 LINIT Special Glazings

### Forward-Standing Facades / Back-Ventilated Exterior Walls

According to DIN 18516 part 4, only toughened glass with heat soak test is to be used for forward-standing facades and back-ventilated exterior walls. The required thermal shock resistance compared to non-toughened U-glass (approx. 150 K for tempered LAMBERTS LINIT tough, compared to approx. 40 K in accordance with DIN EN 14179-1) is particularly important here, in order to avoid heat cracks in the glass.

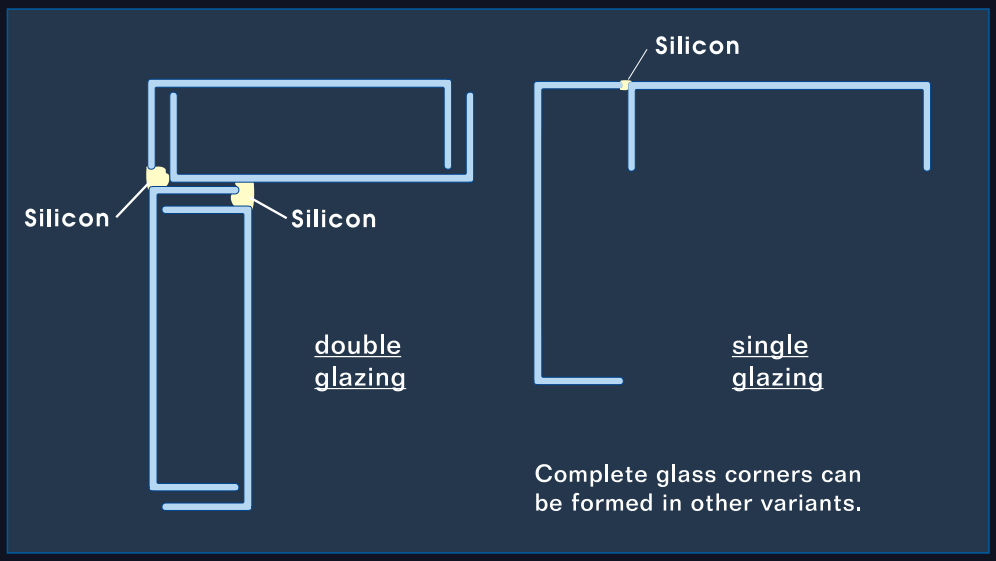
### Suction/Pressure Anchor Structures and Other Intermediate Supports

According to general building supervisory authorisation no. Z-70.4-44, any positive effects of intermediate supports – including so-called suction/pressure anchor structures – cannot be set statically in Germany. This means that the maximum lengths of glass achievable without these structures may not be increased by the use of this type of structures.
Furthermore, please be expressly informed that such structures exert spot stresses on the glass, which generally lead to breakages of the glass for non-toughened channel shaped glass. Therefore, such structures are unsuitable in conjunction with non-toughened glass.

### Locking Structures

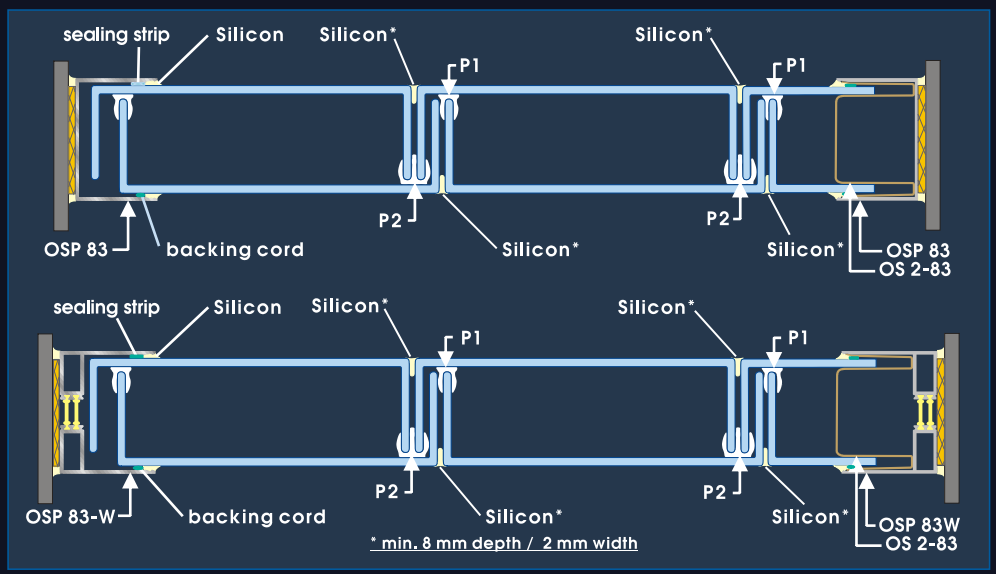
In accordance with AbZ no. Z-70.4-44, channel shaped glass must always be installed without wedging. Non-toughened glasses are not suitable for so-called locking structures, on which the individual shaped glasses are usually wedged in at the ends of the glass. Due to the expected increased spot stresses, glass breakage – if applicable in conjunction with additional thermal stresses - is to be expected. Should locking structures be architecturally desirable nonetheless, then testing should be carried out to determine whether the tempered LAMBERTS LINIT tough U-profiled glass is suitable for the individual case, with reference to building-regulation and project-specific requirements.

## Complete Glass Corners



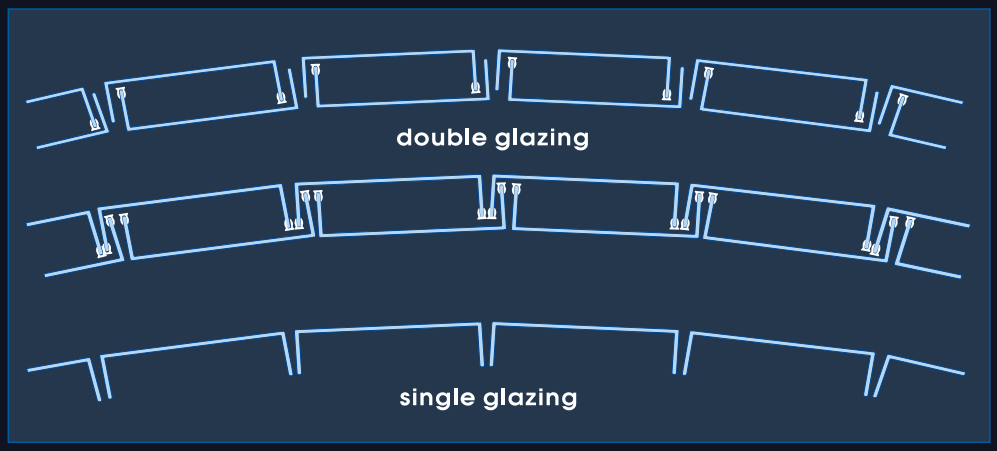

Complete glass corners can be designed in all lay types. For this special solution, no lengthways (so-called L profiles) but rather only complete "U" glass tracks are to be used. In accordance with the additional conditions of DIN 1055, T4, higher wind loads/stresses must be taken into account in corner and edge areas. This also requires structural measures.

## Sports Hall Glazing

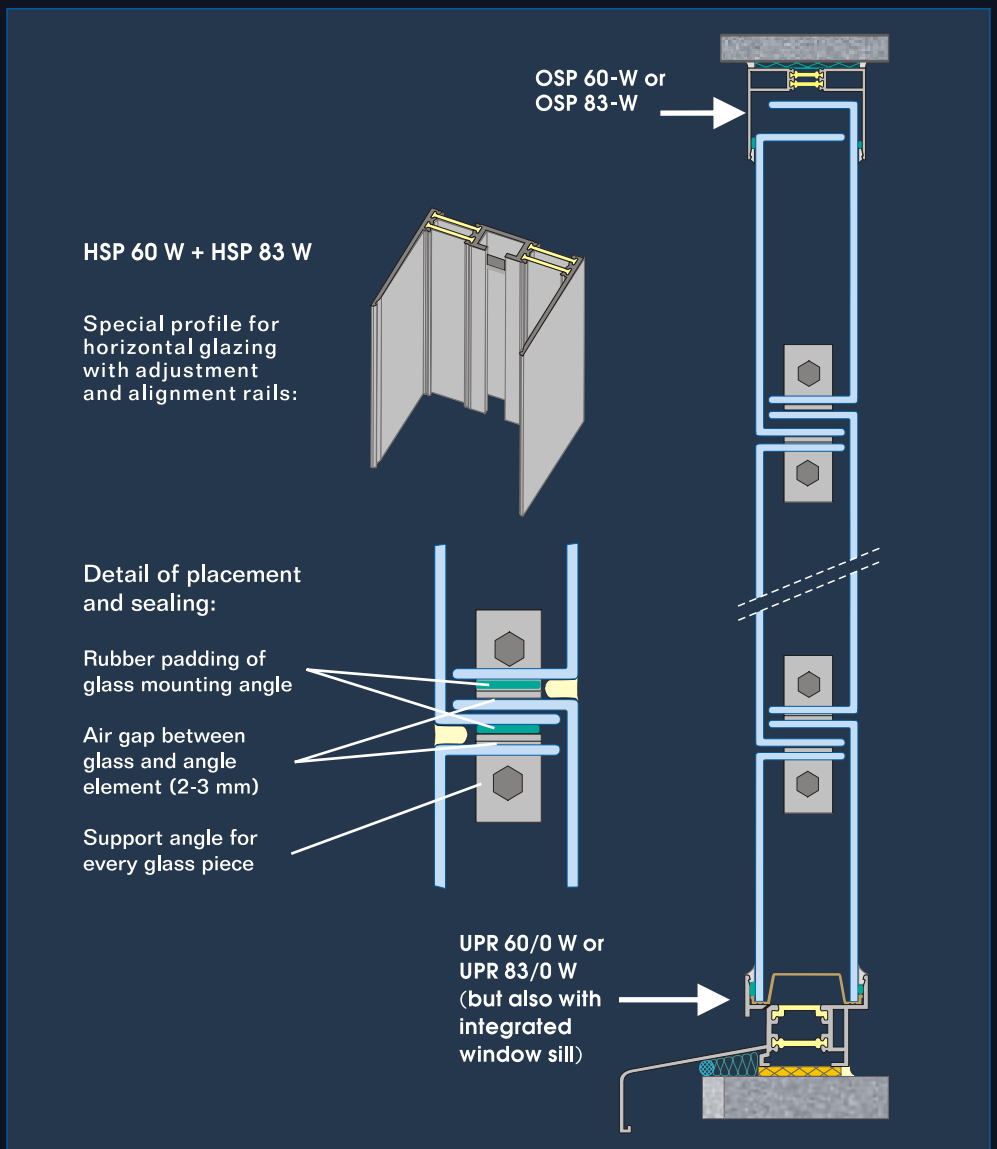



Test reports on safety against ball throwing are available from our sales personnel (in compliance with the DIN 18032 Part 3); maximum length installed 7000 mm! For tested LAMBERTS LINIT please see page 28 + 30 "Safety against ball throwing".

## Round Glazing




## Horizontal Glazing

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## 5. Handling LINIT Channel Shaped Glass

In principle, when handling our U-profiled glass and system components, all guidelines, standards and technical safety considerations regarding safety at work and safety of personnel must be strictly observed.

It must be born in mind that glass can break, and that sharp edges of glass and metal can cause injuries. Adequate measures must be provided at all times by the glazing companies to protect their workers and the general public from any risks, which could arise from the use of all materials supplied by Glasfabrik LAMBERTS.

When handling LAMBERTS LINIT channel shaped glass, clean gloves should be used at all times to avoid visible smears on the surface of the glass.

### Cutting

Using cutting oil, LAMBERTS LINIT channel shaped glass – when not thermically tempered – can be cut on a fixed, even base, with a glasscutter developed specially for channel shaped glass. Glass must only be cut when it is clean and certainly only when it is dry.

In the case of LAMBERTS LINIT U-profiled glass with longitudinal wires, the wires protecting out of the glass after cutting must be removed and the wires´ ends protected. Glass with edges that could cause risk of breakage is to be altered later, on site.

In general, it is recommended that the cut edges of the U-profiled glass should be carefully seamed on site by the installer.

### Packaging Units

LINIT U-profiled glass stripes are as a rule laid together in pairs. Several pairs of strips are bundled together with plastic tapes to form individual packages.

The number contained in a package depends on the particular LAMBERTS LINIT glass types:

| Packing units for LINIT U-profiled glass strips |
|---|
| (of the same LINIT type and glass length ): |
| Flange 41 mm => Packages of 10 or 20 strips each |
| Flange 60 mm => Packages of 8 or 14 strips each |

Generally, LAMBERTS LINIT U-profiled glass is provided with a foil to give protection during transport. This transport foil is to be removed immediately on the site. The glass should be properly covered against climatic and environmental influences, so as to avoid dirt contamination and chemical reactions.

The bundled aluminium framing profiles and the individual aluminium vents or elements are likewise to be protected against the effects of wind and weather.

### Building Site Preparation / Deliver

Delivery of materials is by lorry from our glass-specialist transport, which may also be equipped with a crane – on request by the customer. For deliveries on non-crane lorries, the recipient must ensure adequate unloading and storage facilities, appropriate to the load and format of the packaging units.

The way to the offloading point should always be prepared in such a way that the vehicles can deliver the glass without incurring any damage (smoothed accesses ways without potholes, etc.) Personnel are to take appropriate safety precautions particularly during unloading so as to prevent damage to the material and injury to the personnel.

Glass breakage during offloading is the total risk of the customer.

Transport breakage has to be confirmed and signed by the driver and the customer in a carriage report, in order to be acknowledged by Lamberts. Insurance in cover ends with the arrival of the carrier at the delivery address. In case of damage during transport and in case a transport insurance has been ordered by the customer, LAMBERTS only credits the amount of the broken materials. Any material for replacement must be ordered separately and is considered as a new order.

Any other damage which may occur on the building site shall be the responsibility of the ordering party.

## Building Sites - Storage

When properly storing channel shaped glass, it must be stored in a dry place, i.e. out of the wind and weather. The transport sheet encasing the glass package must be completely removed immediately after unloading.

Store LAMBERTS LINIT channel shaped glass packages on a level surface. Suitable material for bottom and intermediate layers would be e.g. rigid foam. When stacking several packages on top of one another, take into account the load-bearing capacity of the floor and the increasing load on the bottom layer from the padding.

Individual pieces may be leant against walls or supports if proper padding is used to prevent damage to the cut corners and if the wall load is not exceeded. These rules also apply to short term stacking during assembly.


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## 6. Maintenance of the LINIT Channel Shaped Glass Wall

Provided it is installed correctly, in accordance with regulations and with care, LAMBERTS LINIT channel shaped glass wall generally provides durable and lasting glazing.

### Inspection

On the subject of maintenance, German AbZ no. Z-70.4-44 prescribes the following:
"The operator of the construction facility into which the glazing is to be installed, must ensure that significant damage to joins and the channel shaped glass are immediately and professionally rectified by either repair or replacement. Channel shaped glazings must be correctly maintained. Should there be a condition applicable to join sealing for preferable authorised tensions, or should glass tracks tilt by over 3° to the vertical, then the join seals must be checked at regular intervals and repaired if necessary. Damaged channel shaped glass must be replaced. Circulation areas at risk must be secured immediately."

The maintenance described above is particularly to include: glass and frames; all joins such as glass-to-glass, glass-to-aluminium, aluminium-to-base; etc. Other defective influences of other material (e.g. rainwater run-off onto the glass from concrete elements or steel supports) or other types of interplay are also to be investigated.

The builders must arrange appropriate maintenance contracts with the specialist glazier firms.

### Repair Glazing

In the event of damage, LINIT U-profiled glass can be easily replaced. As described on page 42, the individual glass strip can be lifted out of the glass frame once the sealing joints of the elements concerned have been cut of.

Once cleaning has been carried out, the new glass can be inserted and properly sealed in again.

Please note: should subsequent deliveries be required, there may be differences in colour and surface, due to product tolerances between new and old glass.

### Cleaning

When cleaning the glass facade, our general cleaning instructions are to be observed. Special note must be made that no cleaning agents are to be used, which may trigger chemical reactions or attack the sealant materials.

Furthermore, when selecting the cleaning method and cleaning agent for coated glass, it is particularly important that there are no visible effects from a changed in surface of the glass.

In addition, not only the cleaning agent, but also the tools used for cleaning must not impair or damage the function of the building materials used.

## 7.Liability and Guarantee

Our liability and guarantee are in line exclusively with the current edition of our "general terms and conditions of business", our "technical terms and conditions of delivery", and our „general advice" on use of our product information". Current versions are available on our website, www.lamberts.info.

It is apparent from this, that all product information transmitted in this brochure or in any other form by employees of LAMBERTS glass factory (technical specifications, product tests, specialist reports, type static calculations, application diagrams, tendering texts etc.) constitutes only voluntary detail based on our current prevalent knowledge (there is a possibility of human and printing errors).

The respective planner, building client and architect, agent glass dealer and business effecting the assembly must carry out critical checks on the product information received from us – either verbally or in writing – firstly to confirm compliance with current relevant international and national standards and building regulations as well as guild and professional association guidelines, and secondly to establish whether they entirely meet the respective requirements of the specific building project and are suitable for such.

Should it transpire that the information received from us for the specific project either is or was incorrect, then the planner, architect, or – if applicable – manufacturing plant shall be solely liable based on their obligation of inspection.

The customer must be convinced that the goods supplied are in perfect condition and check that they are useable for the specific application, in observance of the aforementioned conditions.

Lamberts glass factory reserves the right to modify the details of structure, equipment and accessories in the catalogues, brochures and drawings in circulation. This may be at any time and without prior warning, if such is in the interests of further development or necessary for technical reasons relating to production/sales.

As previously stated, our liability and guarantee are in line exclusively with the current edition of our "general terms and conditions of business", our "technical terms and conditions of delivery", and our general advice on use of our product information". Current versions are available on our website, www.lamberts.info.

As even our latest brochures may contain information, which – due to the passing of time - is no longer current or which may even be incorrect, it is the duty of the potential purchaser to check our current information on the internet website at www.lamberts.info at every stage of the project process (architect's drafting of tender, order acceptance by the manufacturing plant, ordering from us etc.) and, where applicable, to incorporate this in his/her respective area of responsibility.

The publication of this brochure supersedes all previously published product information regarding LINIT channel shaped glass.

# LAMBERTS LINIT

Why make do with less?

LAMBERTS

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