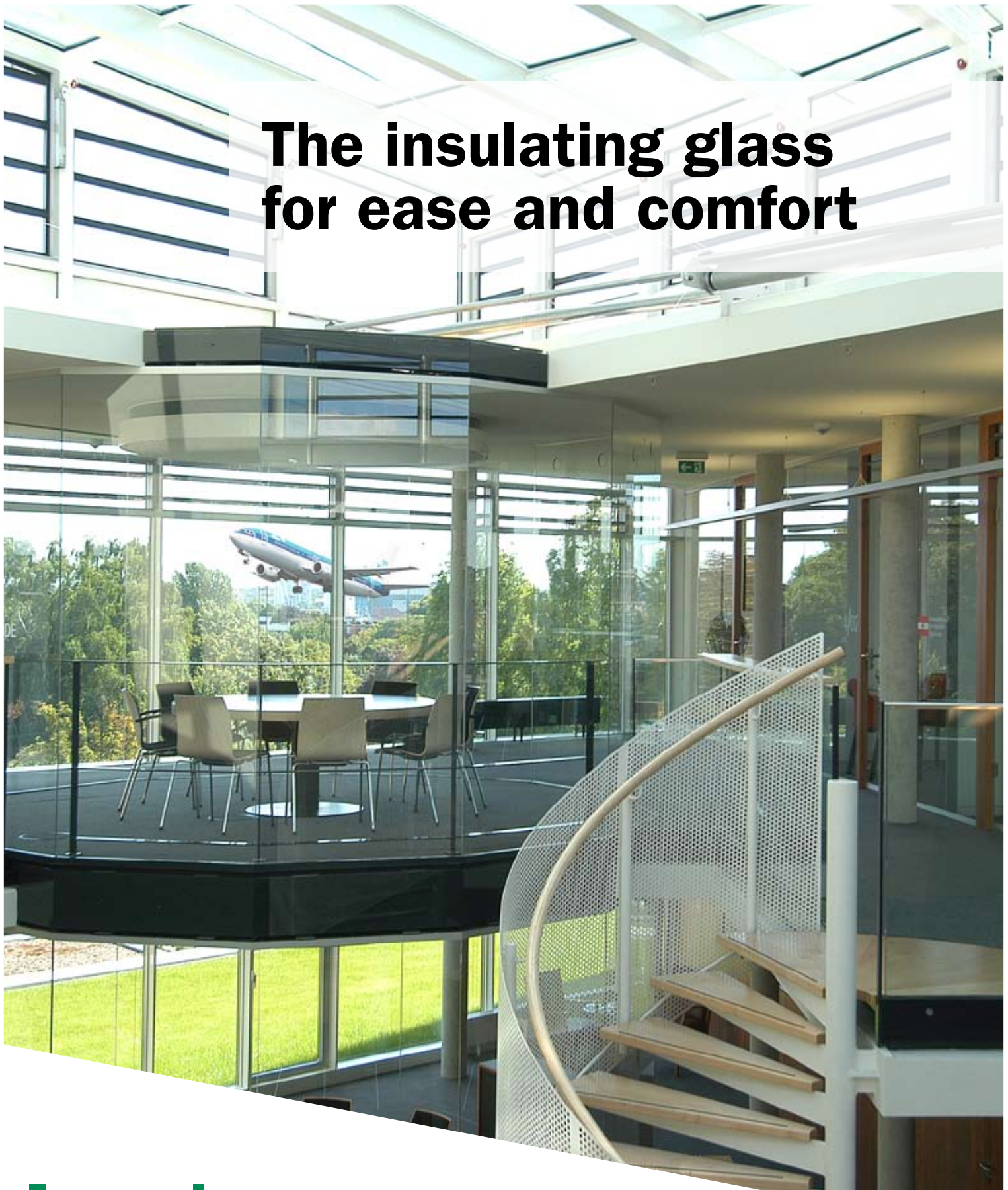




**ISOLAR AKUSTEX®**

# The insulating glass for ease and comfort



**ISOLAR®  
GLAS**

**MEHR  
AUS  
GLAS**

[www.isolar.de](http://www.isolar.de)

# AKUSTEX® – Sound-reduction and energy-saving with glass

AKUSTEX® gives you more quality of life with its noise and heat-insulating properties.

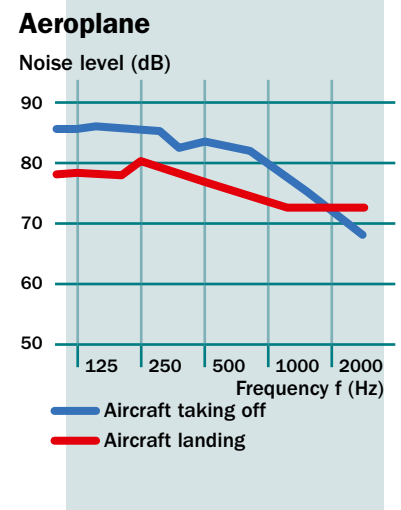
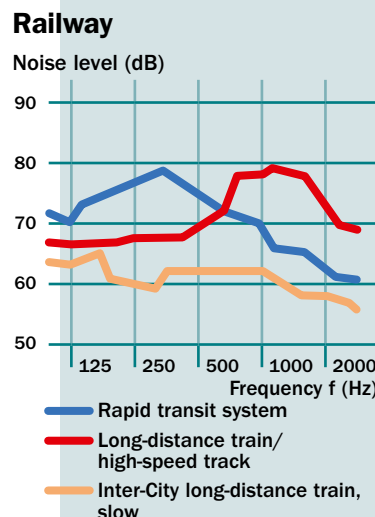
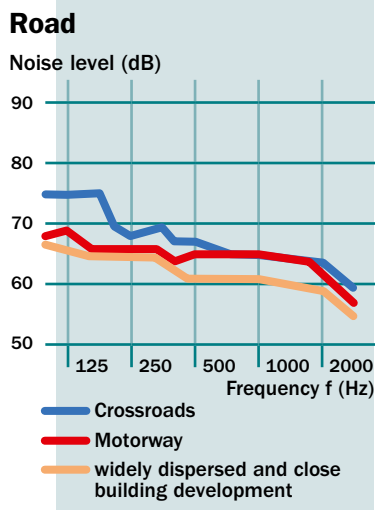
AKUSTEX® combines the unique characteristics of the transparency of glass with the possibilities of effective sound-reduction. Indeed, the principles of sound-reduction using glass are very simple. Depending on requirements, the following can be used:

- Thicker panes (large mass)
- Various glass thicknesses (asymmetrical assembly)
- Increased distance between the panes
- Special gas filling between the panes
- Acoustic laminated safety glass with acoustic foil

More than 80% of people in the industrial countries of Europe feel that their everyday quality of life is negatively affected by noise, particularly traffic noise. The human body reacts to this constant exposure with physical and psychological stress. Permanent stress of this kind is recognised as a cause of acute diseases of heart and circulation. However, if noise can neither be avoided nor reduced (active sound-reduction), then intelligent ways need to be found to reduce noise pollution, in other words, passive sound-reduction. AKUSTEX® makes sound-reduction an auditory experience. Human hearing can perceive a difference of 3 - 5 decibels (dB). In mathematical terms, an improvement in sound-reduction by 10 dB means halving the noise level.

## Noise is always different

Every “noise spectrum” is made up of many frequencies at varying intensities. Even different means of transport have widely differing noise spectra depending on type. This is why precise knowledge of the relevant noise sources is essential to achieve good soundproofing results.





## The proper glass for every situation



**Cross-section AKUSTEX®**

The extensive variety of **AKUSTEX®** sound-insulating glass offers the proper glass depending on individual requirements in window and facade construction, for example when it comes to sound-reduction and overall thickness. The noble gases argon or krypton between the panes assist in insulating against noise and heat.



**Cross-section AKUSTEX® AF**

Particularly high demands on sound-reduction make it necessary to employ **AKUSTEX®** assemblies using acoustic laminated safety glass. The latter are manufactured with the aid of special “acoustic foil” whose characteristics have been specially developed to eliminate noise transmission. In particular in the low-frequency range, very good results have been achieved. For sound-reduction with glass, right up to the limits of what is technically possible, **AKUSTEX®** assemblies with two acoustic laminated safety glass panes, generally of different thicknesses are available.

← Education and  
Supply Centre,  
Stuttgart.  
Built with:  
**AKUSTEX®**  
advance //, 45 dB  
and **AKUSTEX®**  
polaris //, 41 dB  
Photo: © Arnold Glas

## Even for the highest demands



**Cross-section AKUSTEX®  
triple sound-insulating glass**

**AKUSTEX®** takes care of sound-reduction and heat insulation at the highest level simultaneously by combining the principles of sound-reduction using glass with those of a triple heat-insulating glass. Whilst the exterior and the interior panes determine the sound-reduction characteristics, the role of middle pane is only secondary. At the same time the high heat-insulating coatings and the noble gases argon and krypton between the panes ensure higher efficiency when it comes to using costly energy resources. So today, **AKUSTEX®** triple sound-insulating glass is already setting the standards for tomorrow.

**Hotel Ramada,  
Berlin-Mitte  
Built with:  
AKUSTEX®  
nordic //, 46 dB**  
↓





# Technical Data on ISOLAR AKUSTEX®

## ISOLAR AKUSTEX® Sound insulating glass

Glass type	Glass assembly	Thickness in mm, Tolerance dependant on type	Weight in kg/m <sup>2</sup> (± 1,0)	U <sub>g</sub> (DIN EN 673) ΔT = 15K in W/m <sup>2</sup> K	Sound-reduction (DIN EN ISO 140-3/717-1) R <sub>w</sub> in dB	Spectrum adaptation value <sup>2)</sup> C, C <sub>tr</sub>	Light transmission (EN 410) in % (± 2)	Solar factor <sup>1)</sup> g-value in % (± 2) (EN 410)
<b>AKUSTEX® advance //</b>								
25.36	6-15-4	25	25	1,1	36	(-2, -5)	80	61
27.37	8-15-4	27	30	1,1	37	(-1, -5)	79	59
30.39	10-16-4	30	35	1,1	39	(-2, -6)	78	58

## ISOLAR AKUSTEX® AF Sound insulating glass

AKUSTEX® advance //

AF 29.39	4/4-16-4	29	30	1,1	39	(-1, -5)	79	56
AF 30.42	4/4-16-6	30	35	1,1	42	(-2, -6)	78	56
AF 35.43	5/5-16-8	35	47	1,1	43	(-2, -6)	77	55
AF 36.44	4/4-20-8	36	40	1,1	44	(-3, -8)	78	56
AF 34.45	4/4-16-10	34	45	1,1	45	(-2, -7)	77	56
AF 38.47	6/6-16-4/4	38	50	1,1	47	(-2, -6)	76	53
AF 42.47	4/4-24-10	42	45	1,2	47	(-2, -7)	77	56
AF 42.49	6/6-20-4/4	42	51	1,1	49	(-2, -7)	76	53
AF 46.50	8/8-20-4/4	46	52	1,1	50	(-1, -6)	75	51
AF 46.51	6/8-24-4/4	46	56	1,1	51	(-2, -6)	76	53
AF 46.51	8/8-16-6/6	46	72	1,1	51	(-1, -5)	74	51
AF 49.52	8/6-24-4/6	49	62	1,1	52	(-2, -6)	75	52
AF 60.54	10/8-29-6/6	60	77	1,2	54	(-2, -5)	74	50

## ISOLAR AKUSTEX® Triple sound insulating glass

				advance///	ensolar///			advance///	ensolar///	advance///	ensolar///
38.36	6-12-4-12-4	38	35	0,7	0,8	36	(-2, -6)	71	70	50	58
40.37	8-12-4-12-4	40	40	0,7	0,8	37	(-1, -6)	70	69	49	57
42.37	6-12-4-16-4	42	36	0,6	0,7	37	(-2, -6)	71	70	49	58
40.38	6-10-4-16-4	40	35	0,7	0,8	38	(-2, -6)	71	70	49	58
42.39	8-12-4-12-6	42	45	0,7	0,8	39	(-2, -5)	70	69	49	57
46.41	8-16-4-12-6	46	46	0,6	0,7	41	(-2, -6)	70	69	49	57
AF 43.42	6-12-4-12-4/4	43	45	0,7	0,8	42	(-2, -7)	70	69	50	58
44.42	10-12-4-12-6	44	51	0,7	0,8	42	(-1, -4)	69	69	48	56
46.43	10-12-4-12-8	46	55	0,7	0,8	43	(-2, -5)	69	68	47	56
AF 45.43	8-12-4-12-4/4	45	51	0,7	0,8	43	(-3, -8)	69	69	48	57
AF 47.46	10-12-4-12-4/4	47	56	0,7	0,8	46	(-1, -5)	69	68	47	56
AF 50.47	10-16-4-12-4/4	50	56	0,6	0,7	47	(-1, -5)	69	68	48	56
AF 51.49	6.6-12-6-12-4/4	51	66	0,7	0,8	49	(-2, -6)	68	67	44	52
AF 54.50	6.6-14-4-14-4/4	54	62	0,6	0,7	50	(-2, -6)	68	68	45	52

The prefix AF in front of the type key indicates a glass assembly with acoustic laminated safety glass. Recommendation: Installing acoustic laminated safety glass as the inner pane promotes solar gain and acoustic characteristics in colder climates.

Other types on request. Dimensions as per respective, valid price list. The suffix AKUSTEX® advance or AKUSTEX® ensolar refers to the coating. Combination with other coatings on request.

Type key: Numeral 1 = pane thickness (mm), Numeral 2 = sound insulation R<sub>w</sub> (dB)

<sup>1)</sup> The value depends on the position of the coating(s). <sup>2)</sup> "Spectrum adaption values" serve to adjust the rated sound-reduction index to other noise sources, for example traffic noise.

On request all ISOLAR AKUSTEX® sound-insulating glass can also be fitted with the thermally improved edge seal system (warm edge).

The above-mentioned types and values are based on the specifications in the ISOLAR® 2015 programme. Please see the most recent issue!

In the case of AKUSTEX® double glass panes with an edge length less than 500 mm, the thinner pane should be of thermally toughened safety glass. In the case of AKUSTEX® triple glass with an edge length less than 700 mm, the thinner of the outer panes should be of thermally toughened safety glass.

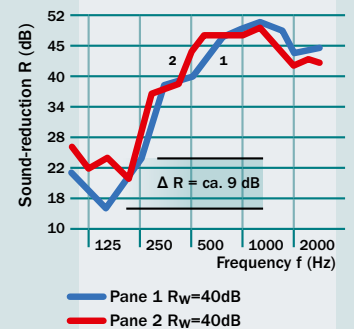
\*J)The indicated performances have been determined according to the relevant test standards and legal rules for the test dimensions and test conditions required or described therein. Deviating dimensions and combinations as well as glass thickness adjustments resulting from static requirements, for example, may lead to changes in individual characteristics. Indicated values only refer to glass elements. The performances of building elements depend to a large extent on the construction of the frame. U<sub>g</sub> values are calculated according to DIN EN 673 for vertical installations. Due to tolerances of input parameters, a deviation of up to 0,1 W/m<sup>2</sup>K from calculated value is possible. Please also note our Technical Data Sheet!

# Sound-reduction starts at the planning stage

Achieving optimum passive sound-reduction is always a planning task involving the entire building. Besides detecting the noise sources, it is important to determine the intended sound-reduction depending on the space utilisation in each case. What must be taken into account is not only the sound-reduction characteristics of the individual building materials and components, but also their interaction. DIN 4109 with its associated supplements provides basic orientation for planning and implementation. For planning windows, frequently VDI Guideline 2719 with the „sound reduction classes“ described therein is also used.

All **AKUSTEX®** sound-insulating glass has been tested in notified test houses according to the relevant standards. If the notes in supplementary sheet to DIN 4109 are observed in detail and precisely followed during installation, in conjunction with the test reports for the **AKUSTEX®** sound-insulating glasses, this prevents the clients from carrying out their own additional tests.

Sound-reduction in comparison



It is recommended always to consider the sound-reduction graphs. Glass with the same sound-reduction index can have very different acoustic characteristics (see example). The sound-reduction of glass 2 at a frequency of 125 Hz - in other words in the range of maximum traffic noise - is almost twice as good as that of glass 1.

## Sound reduction classes of windows 1)

Sound-reduction class	Apparent sound-reduction index $R_w$ of the correctly working window, once installed in a building, in dB	Required sound-reduction index $R_w$ of the correctly working window, in a test cabinet, in dB	Required sound-reduction index $R_w$ of the glass for single glazed windows with insulating glass, in dB
1	25 bis 29	$\geq 27$	$\geq 27$
2	30 bis 34	$\geq 32$	$\geq 32$
3	35 bis 39	$\geq 37$	$\geq 37$
4	40 bis 44	$\geq 42$	$\geq 45$
5	45 bis 49	$\geq 47$	$\geq 49$ <sup>2)</sup>
6		$\geq 52$	$\geq 52$ <sup>3)</sup>

1) Single glazed window with insulating glazing as per VDI 2719, Table 2 + 3

2) Single glazed window with insulating glass for Class 5 must be tested

3) Up to the present, sound reduction class 6 is only achieved by tested box-type windows

Chamber of  
Commerce and  
Industry, Kiel  
Built with:  
**AKUSTEX®**  
advance // AF,  
41 dB  
Photo: © ISOLAR®  
↓



# Quality and safety with ISOLAR® glass

The production of **AKUSTEX®** sound-proofing glass is subject to comprehensive internal monitoring by the manufacturing facility in question and the **ISOLAR®** Group in accordance with the EN 1279 specifications. Numerous manufacturing facilities are additionally monitored by the Institut für Fenster-

technik in Rosenheim, as well as by other independent Institutes in Europe.

All **AKUSTEX®** sound-insulating glass is provided with high heat-insulating coatings. Furthermore, its technical characteristics can be combined with those of additional functional glasses:



**NEUTRALUX®**  
Save energy by heat insulation using glass



**SOLARLUX®**  
Sun control glass – energy-saving and aesthetic design



**MULTIPACT®**  
Attack-blocking glazing for protection of property and against burglary



**DEKOREX®**  
Glazing for design purposes



**VACUREX®**  
Optimum heat insulation with vacuum technology



**ORNILUX®**  
Glass architecture and bird protection – not a contradiction



**VISOREX®**  
Glazing with light-diffusing and light-directing characteristics as well as switchable glazing

← Chamber of  
Commerce and  
Industry, Kiel  
Built with:  
**AKUSTEX®**  
advance // AF,  
41 dB  
Photo: © ISOLAR®





**ISOLAR AKUSTEX®**



Town Hall, Remshalden  
Built with:  
AKUSTEX® advance ///, 39 dB and  
AKUSTEX® platin ///, 41 dB  
Foto: © Arnold Glas

## We will be pleased to advise you

**ISOLAR®**, your expert partner in everything to do with glass: We provide innovative, customized solutions for the widest range of different requirements.

**Just ask us!**



**ISOLAR Glas Beratung GmbH**

Auf der Mauer 13 • D-55481 Kirchberg

Phone +49 (0) 67 63/5 21 + 5 22

Fax +49 (0) 67 63/12 78

service@isolar.de • [www.isolar.de](http://www.isolar.de)

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