History –
Technical Requirements 7th Edition, Rev. 1, December 2008

The following section:

7th Edition, ~~January~~ 2008

Is changed to:

7th Edition, Rev. 1, December 2008

Preface

The following section:

2.6 Information about functional testing:

Is changed to:

2.6 Information about safety and functional testing:

5. Timber windows and doors

The following section is amended:

5.3.5 Finger joints

5.3.6 Lamination

8. Timber/aluminium windows and doors

The following section is changed:

~~8.3.5 Aluminium (alu) material:~~

~~8.3.6 Synthetic materials~~

~~8.3.7 Type testing:~~

The following section is amended:

8.3.5 Finger joints

8.3.6 Lamination

8.3.7 Aluminium (alu) material:

8.3.8 Synthetic materials

8.3.9 Type testing:

1. Introduction

The following section is deleted:

~~The Requirements also serve to ensure that all current Danish regulatory regulations and standards including provisions issued under the EU Construction Products Directive have been complied with. This is ensured by reviewing the Requirements at least once a year.~~

Is amended:

As an ongoing part of this process and to ensure they are up to date, the Technical Requirements are reviewed at least once a year.

The following section:

This edition of the Requirements was approved by the VinduesIndustrien Technical Committee in December ~~2007~~.

Is amended:

This edition of the Requirements was approved by the VinduesIndustrien Technical Committee in December 2008.

The following section:

2.6 Information about functional testing:

Is amended:

2.6 Information about safety and functional testing:

The following section:

~~A unit may only be described as having been functionally tested if the test has been conducted at an accredited laboratory in accordance with current standards.~~

~~Test results must be referred to in brochures and sales publications in a form which gives real information about the outcome. If requested, the complete report must be supplied.~~

The test reports must be kept on file for as long as the product remains in production plus at least ~~five~~ years.

Is changed to:

The manufacturer must have determined the load bearing capacity of the safety devices of each unit as stipulated in DS/EN 14351-1 point 4.8.

Top swing windows must have passed type testing in accordance with DS/EN 14609, demonstrating the capability of the window and its hardware to support a 350N load for at least 60 seconds.

A unit may only be described as having been functionally tested if the test has been conducted at an accredited/notified laboratory in accordance with current standards.

The test reports must be kept on file for as long as the product remains in production plus at least 10 years.

2.8 Product liability:

The following section:

In order to cover damage caused by its products, the manufacturer must take out product liability insurance covering up to DKK10 million in connection with damage to buildings, furniture and fittings etc. (damage to property). The insurance should also provide cover of up to DKK10 million for death or injury to persons

Is amended:

and be extended to include cover for damage to items which the insured has undertaken to make ready, install, mount or to treat or process in some other way, irrespective of whether the damage arises during or after the performance of the task.
For insurance coverage requirements, please see Annex 15.

2.9 Consumer safeguards

The following section:

The window manufacturer must provide a warranty which meets or exceeds that of VinduesIndustrien.

The window manufacturer must further subscribe to a warranty underwriting scheme providing a level of cover for consumers which meets or exceeds the ~~level stated~~. As an alternative to a warranty underwriting scheme his obligations may be covered by a recognized insurance company registered in Denmark.

- ~~The window manufacturer shall be in possession of and under an obligation to produce the warranty documents including the terms and conditions of the warranty at any time the certifying body may request him to do so.~~

- ~~Claims for defects in a delivery under warranty must be made within five years of the delivery date.~~

- The warranty scheme must provide cover in case the supplier cannot or will not make ~~good defects.~~

- Claims are dealt with by Byggeriets Ankenævn, the Appeals Board established by the Danish Consumer Council, the National House Owners Association and the Danish Construction Association. Defects are rectified in accordance with the findings of the Board.

- ~~Claims must be covered up to DKK 5,000 incl. VAT for each component/unit and up to DKK 100,000 incl. VAT for each disputed building project.~~

- ~~The warranty underwriting scheme must provide cover for at least DKK 500,000 incl. VAT for each calendar year of the five year warranty period equal to a minimum of DKK 2,500,000.~~

Is amended:

The window manufacturer must provide a warranty which meets or exceeds that of VinduesIndustrien.

The window manufacturer must further subscribe to a warranty scheme providing a level of cover for consumers which meets or exceeds the levels mentioned below. As an alternative to a warranty scheme his obligations may be covered by a recognized insurance company with an office in Denmark.

- For each sale the window manufacturer shall, in connection with entering into an agreement for this sale, provide the consumer with warranty documents including the terms and conditions of the warranty or refer in writing to a website where these documents can be found. The window manufacturer shall be in possession of and under an obligation to present these at any time if requested to do so by the certifying body.

- Claims for defects in a delivery under warranty may be made up to five years after the window manufacturer's delivery date, however not later than three months after discovery of the defects.

- The warranty scheme must provide cover in case the supplier cannot or will not rectify defects.

- Claims are dealt with by Byggeriets Ankenævn, the Appeals Board established by the Danish Consumer Council, the National House Owners Association and the Danish Construction Association. Defects are rectified in accordance with the findings of the Board.

- The warranty must provide cover of up to DKK 10,000 incl. VAT for each component/unit and up to DKK 200,000 incl. VAT for each disputed building project.

- The warranty scheme must provide cover of up to DKK 1,000,000 incl. VAT per company, and DKK 5,000,000 incl. VAT per calendar year.

OBS:
Consumers safeguard

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2605 Brøndby
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Mail: fje@fpr.dk

3.1 Quality control system documentation

The following section:

m. Quality records

A procedure must be established to ensure that relevant data concerning production orders, production process and quality records are kept for at least ~~6~~ years.

Is amended:

m. Quality records

A procedure must be established to ensure that relevant data concerning production orders, production process and quality records are kept for at least 10 years.

3.2 Requirements concerning inspection of finished goods:

The following section:

The completed tables must be kept for at least ~~six~~ years.

Is changed to:

The completed tables must be kept for at least 10 years.

4.0 General:

The following section:

When a company opts for the VinduesIndustrien Technical Requirements as the basis for its product certification, it is obliged to subject all its standard products ~~to certification~~, yet may still manufacture special products to order. However, it must be clearly evident from the contract for such products that the products are not certified.

Is changed to:

When a company opts for the VinduesIndustrien Technical Requirements as the basis for its product certification, it is obliged to subject to certification all its standard products sold in the Danish market, yet may still manufacture special products to order. However, it must be clearly evident from the contract for such products that the products are not certified. If the standard products are sold in export markets without being manufactured in accordance with VinduesIndustrien's Technical Requirements, the manufacturer must have in place written procedures about how to ensure that these products are not sold as certified products

4.1.1 Inspection frequency:

The following section:

If ~~inspection reports are not forwarded or if an inspection visit finds~~ the manufacturer in breach of the above limits for the number of defects, the frequency returns to 2 inspection visits per year.

Is changed to:

If having been given five days' advance notice in writing the manufacturer does not forward in-house inspection results or if an inspection visit finds the manufacturer in breach of the above limits for the number of defects, the frequency returns to 2 inspection visits per year.

5.0 Dimensioning and weathertightness

The following section:

~~Window and door elements designed for sealed glazing units should be dimensioned to ensure the maximum calculated deflection at a pressure of 1200 Pa does not exceed 1/300th of the length of the edge of a glazing unit, however not exceeding 8 mm for bonded glazing units.~~

Note:

~~The above dimensioning ensures that the glazing unit and the casement/frame the unit is installed in will withstand a high wind load. It should also be noted that, in the longer term, large opening casement windows will often be affected by functional problems~~. It is therefore advisable not to manufacture opening casements with an area in excess of 1.7 m^2 ~~and an edge length in excess of~~ 1.5 m. If exceeding these dimensions, particular attention ~~must~~ be paid to e.g. casement dimension, fitting of hardware, hinge design and number of fastening points. In side hung units particular attention must be paid to the height/width (side) ratio.

If weathertightness testing of windows and doors is required, tests shall be based on the following standards:

Is changed to:

Note:

Large opening casement windows may be affected by functional problems. It is therefore advisable not to manufacture opening casements with an area in excess of 1.7 m^2 and to restrict the length of the longest edge to 1.5 m. If exceeding these dimensions, particular attention should be paid to e.g. casement dimension, fitting of hardware, hinge design and number of fastening points. Furthermore, in the case of side hung casements, the height/width (side) ratio should be examined more closely.

If, in the case of large units, it is deemed necessary to document the resistance to wind load in more detail, tests must be conducted in accordance with DS/EN 12211.

Classification requirements must be stated in accordance with DS/EN 12210.

Normative classification requirements under normal Danish conditions would be:

Class 3 for load
Class C for deflection.

If weathertightness testing of windows and doors is required, tests shall be based on the following standards:

5.2 Thermal performance

The following section:

For external doors, values must given for a 1230 x 2180 mm standard size panelled door with two standard glazed lights and a mid-rail and a 1230 x 2180 mm flush door.

Is amended:

For external doors, values must given for a 1230 x 2180 mm standard size panelled door with two standard glazed lights and a mid-rail and a 1230 x 2180 mm flush door.

A standard glazing unit is defined as the most commonly used glazing unit in the product system in question.

The following numbers:

The temperature of the interior surfaces of the unit must not be less than ~~7~~°C provided there is a room temperature of 20°C and an external temperature of 0°C. This can be documented via calculations according to DS/EN ISO 10077-2.

Is amended:

The temperature of the interior surfaces of the unit must not be less than 8.5°C provided there is a room temperature of 20° C and an external temperature of 0° C. This can be documented via calculations according to DS/EN ISO 10077-2.

The following section:

~~In addition to the surfaces of casement and frame, the interior surfaces of the unit also include the sealed double glazed unit, glazing gaskets and weather seal between frame and casement. However, the surface of weather seals is not included if air access to the weather seal is via a gap with a width of 4 mm or less and a depth of 5 mm or more.~~

Note:

~~In dwellings and buildings with high humidity the consumer may wish to achieve a better condensation rating than is achieved through the above requirements. When such wishes are expressed, the window manufacturer ought to be able to document the surface temperature of the unit(s) in question when using sealed glazing units with warm edge spacers or other technology.~~

~~In connection with the development of new types of windows the aim should be for condensation standards to exceed the above requirements in every respect. This also applies to the surface temperature of weather seals.~~

Is amended and changed

The above requirements regarding the minimum temperature of interior surfaces do not apply to window and door handles, lock cylinders and door cills.

Note:

The minimum temperature of 8.5°C mentioned above means that condensation will only occur when the relative humidity of the air in the room exceeds 48 %. This is based on a room temperature of 20°C and an outside temperature of 0° C.

For advice and guidance on indoor climate and ventilation of the dwelling, please consult your national asthma-allergy association as well as VinduesIndustrien's Installer and User Manual.

5.3.4 Additional definitions and requirements for workpieces in softwood:

The following section:

~~***Finger joints:***~~

Is now a new chapter:

5.3.5 Finger joints:

The following section:

~~Finger joints across the full cross-section of end-jointed profiles may be used on the following conditions:~~

The profile of the joint must comply with DIN 68140.

The adhesive employed must meet all the requirements of Class D4 in EN 204 as well as the requirements regarding resistance and strength at 80°C in accordance with EN 14257.

Is amended:

Finger-jointing of end-jointed profiles is permitted on the following conditions:

The profile of the joint must comply with DIN 68140 or a similar, recognized standard.

The adhesive employed must meet all the requirements of Class D4 in EN 204 as well as the requirements regarding resistance and strength at 80°C in accordance with EN 14257.

The following section:

Approved work instructions and forms for the recording of inspection and test data must be available for all the inspection and testing activities mentioned. All data record forms must be kept for at least ~~6~~ years and be accessible to external inspectors.

Is amended:

Approved work instructions and forms for the recording of inspection and test data must be available for all the inspection and testing activities mentioned. All data record forms must be kept for at least 10 years and be accessible to external inspectors.

The following section:

Units with end-jointed profiles based on finger-joints must always be supplied with surface treatment completed in accordance with 5.5.2.

Is amended:

This requirement does not apply to glazing beads. However, for glazing beads in pine to be exempt from the requirement, the heartwood proportion must be at least 90 %.

The following section:

If finger-jointed timber is sourced from a subcontractor, the subcontractor/ manufacturer must be affiliated to ~~the KSL-inspection (Danish Glulam Quality Control Organization) or a similar external inspection scheme~~ and the profiles labelled in accordance with the rules of this ~~organization~~

Is amended:

If finger-jointed timber is sourced from a subcontractor, the subcontractor/ manufacturer must be affiliated to an impartial body approved by VinduesIndustrien and the profiles labelled in accordance with the rules of this body so as to ensure traceability.

The following section:

~~***Laminated timber:***~~

Is now a new chapter:

5.3.6 Lamination

The following section:

~~Both frame and casement timbers may be glue laminated from smaller laminates. In laminated profiles each laminate in the hatched areas of Annex 10 illustrations must have a heartwood proportion of at least 60 %.~~

~~It is optional for laminations to be made with the glue line located parallel or perpendicular to the external surface of the profile.~~

~~Where laminations incorporate laminates which are not directly visible, these laminates may be of a lower quality of wood in respect of knots and similar visual faults than is required for solid wood profiles.~~

~~On weather exposed faces the distance from the surface to the first glue line parallel to the surface must be at least 6 mm.~~

~~Laminated profiles must be manufactured and subjected to in house inspection in accordance with the "Technical Requirements for the manufacture and inspection of KSL glued laminated timber for windows and external doors".~~
~~In the case of companies not subjected to KSL inspections an external inspection of their glulam manufacture as stipulated in 10.3.1 of the KSL Technical Requirements will be conducted during an inspection visit in connection with product certification.~~

~~The labelling requirement under point 11 of the KSL Technical Requirements does not apply to companies manufacturing glued laminated joinery profiles for their own use.~~

~~If laminated profiles are sourced from a subcontractor, the subcontractor/ manufacturer must be affiliated to the KSL inspection or a similar external inspection scheme and the profiles labelled in accordance with the rules of the scheme.~~

~~The laminating of timber species other than softwood is permitted provided it can be documented on the basis of testing or existing evidence that satisfactory joint properties can be achieved.~~
~~Profiles laminated from more than one timber species must meet the same requirements as profiles laminated from one timber species only.~~

Is changed: erstattes med

In laminated profiles, which receive a base coat and surface treatment in accordance with treatment systems 1, 2 or 5, each laminate in the hatched areas of Annex 10 illustrations must have a heartwood proportion of at least 60 %.

In profiles treated in accordance with treatment system 2 ØKO, each laminate in the hatched areas of Annex 10 illustrations must have a heartwood proportion of at least 90 %.

Lamination of non-softwood timber species is permitted, provided it can be demonstrated at both the internal, in-house inspection and the external inspection that the applicable performance requirements have been met.
The same applies to laminated profiles constructed from different timber species.

Note:

In terms of the stability and durability of laminated profiles it is essential to take into account that the tangential moisture deformation of (backsawn) timber can be up to twice the radial moisture deformation (quartersawn timber).
The basic principles of constructing laminated profiles are listed in DS/EN 13307-1, Annex A.

Prior to lamination, the individual laminates must be conditioned to room temperature and a moisture content of 12 ± 2 %.

As regards visual defects etc. the completed laminated profiles are subject to the same requirements as solid timber profiles.

When bonding with thermoplastic wood adhesives the adhesive must be classified as Class D4 in accordance with DS/EN 204 (tested in accordance with DS/EN 205).
When bonding with thermosetting wood adhesives the adhesive must be classified as Class C4 in accordance with DS/EN 12765 (tested in accordance with DS/EN 205).

The bonding process must be completed in accordance with the adhesive supplier's instructions for the type/variant of adhesive used.

Note:
In laminated profiles where the glue lines of the completed window/door assembly are directly exposed to the weather (water and sun) the use of Class C4 (thermosetting) adhesive is recommended.

In-house inspection and checking:

The manufacturer's own in-house inspections must comprise at least the following activities:

- checking the climatic conditions in manufacturing hall and warehouse.
- checking the moisture content of pre-production timber
- checking the moisture content of laminates ready for bonding
- checking laminate thickness
- checking the adhesive dosing
- checking the lamination process (pressing time, temperature, pressure)

Instructions on how to conduct the checks and forms for the recording of the resulting data must be available for all checking and inspection activities. It must be evident from the recorded data whether the activities checked meet the specified requirements.

Performance requirements:

The manufacturing hall and warehouse temperature must be maintained at a minimum of 15º C and the humidity of the ambient air must be controlled to ensure the timber maintains the specified moisture content. (Recommended values are a temperature of 20º C and humidity in the range 55 – 65 %).
Moisture content of timber and laminates ready for bonding: 12 ± 2 %.
Maximum deviation of individual laminates from mean thickness: +/- 0,1 mm. This applies to the laminate both lengthwise and crosswise.
The dosing of adhesive must comply with the adhesive supplier's instructions.
The lamination process must comply with the instructions which must be provided by the suppliers of lamination equipment and adhesives.

Inspection frequency:

Climatic conditions must be recorded twice per working day/shift.
Timber moisture content must be recorded on taking delivery and again prior to further processing.
The moisture content of laminates ready for bonding must be recorded twice per working day/shift.

Laminate thickness must be checked at least twice per working day/shift. Additional checks must be performed after each tool change and resetting for different dimensions.
Adhesive dosing must be checked at least once per working day/shift.
The lamination process must be checked at least twice per working day/shift.
Checking and registration of individual sub-processes must follow the instructions which must be provided by the suppliers of adhesive and lamination equipment.

The extent of in-house checking and inspection activities and the number of items checked as well as the frequency of checks for each individual activity must comply with the procedures approved by the external inspection body.
Similarly, the way inspection data is recorded must be approved by the external inspection body.

All data record forms must be kept for at least 10 years and be accessible to external inspectors.

In-house testing:

The strength of glue lines must be tested in-house. This can take the form of shear testing or splitting of glue lines.

Shear testing must be conducted in accordance with DS/EN 392 and the breaking stress recorded.

The splitting of glue lines is conducted on 40 mm long test samples using a chisel or wood chisel and the percentage of wood failure recorded.

Sampling must be conducted at least twice per working day/shift, each time selecting at least 3 samples per bonding process line.

Performance requirements:

Shear testing must produce a mean breaking stress value for glue lines of at least 6 N/mm² for each test sample.
When splitting glue lines the split surfaces must exhibit at least 90 % wood failure.

Both test methods are subject to the stipulation that dated tests from the previous five days' production must be kept and be accessible to external inspectors.
The requirements in respect of test results, the extent and frequency of testing as well as the recording of test results must be specified in procedures approved by the external inspection body.

External inspection:

The external inspection must comprise at least the following:

- checking and, if required, testing the accuracy of the manufacturer's measuring equipment
- examining the results of the manufacturer's own in-house inspections
- examining the results of the manufacturer's own in-house testing
- inspecting the documentation for the classification of adhesives used
- selecting samples for external testing.

External testing:

At the external inspection, 6 laminated profiles are selected from each bonding process line. From each of these profiles, a 600 mm long sample is cut and sent for testing at an accredited

laboratory.
From each of these 600 mm long samples the laboratory will cut 3 test samples, each 75 mm in length, to use for delamination testing in accordance with DS/EN 391 as well as 3 test samples for the testing of glue line strength in accordance with DS/EN 392.

Delamination testing

If thermoplastic adhesive D4 has been used in the lamination, the cut-out test samples are put through a test cycle in accordance with DS/EN 391, method C.

Performance requirements:

Max. 20 % delamination as an average for the test samples from the same 600 mm sample.

If thermosetting adhesive C4 has been used in the lamination, the cut-out test samples are put through a test cycle in accordance with DS/EN 391, method A.

Performance requirements:

Max. 5 % delamination after 2 initial cycles or max. 10 % delamination after 1 extra cycle as an average for the test samples from the same 600 mm sample.

For both adhesive types the delamination percentage is calculated on the basis of the total delamination length in relation to the total glue line length on the two end grain surfaces.

Testing glue line strength:

The test is conducted as a shear test in accordance with DS/EN 392, completing tests on 3 test samples from each of the 600 mm long samples received.

Performance requirements:

Glue line breaking stress must be at least 6N/ mm² as an average for the test samples from the same 600 mm sample.

Requirements for external inspections:

In the case of window manufacturers affiliated to DVC/Dansk Vindues Certificering (the Danish window certification body) and manufacturing their own laminated profiles, external inspections are conducted along with the biannual or annual DVC-inspections.
At each external inspection samples are selected and sent for external testing at an accredited laboratory.

In the case of other manufacturers of laminated profiles who act as suppliers to window manufacturers affiliated to the DVC, external inspections must be conducted by an impartial body approved by VinduesIndustrien.
Manufacturers are paid two annual inspection visit. At each of these, samples are selected and sent for external testing at an accredited laboratory.
If the requirements are not met, fresh samples are collected by the inspection body for testing at an accredited laboratory. If these samples also fail to meet requirements, the inspection body will decide on what action to take.
If deemed necessary by this body, the approval must be revoked until compliance with the requirements has been re-established.

Labelling:

Laminated profiles from suppliers must carry a clear supplier's label (name/logo) and the time of manufacture (week and year).

5.5.2 Treatment systems for softwood:

Treatment system 1:

The following section:

Penetration must meet the requirements for Class ~~P5~~ in DS/EN 351-1 (i.e. at least 6 mm lateral ~~and 50 mm axial~~ penetration in sapwood – corresponding to Nordisk Træbeskyttelsesråd (Nordic Wood Preservation Council) NTR Class B).

Is amended:

Penetration must meet the requirements for Class NP3 in DS/EN 351-1 (i.e. at least 6 mm lateral penetration in sapwood – corresponding to Nordisk Træbeskyttelsesråd (Nordic Wood Preservation Council) NTR Class B).

Treatment system 2:

The following section:

Penetration must meet the requirements for Class ~~P2~~ in accordance with DS/EN 351-1 (i.e. at least 3 mm lateral ~~and 40 mm axial~~ penetration in sapwood).

Is amended:

Penetration must meet the requirements for Class NP2 in accordance with DS/EN 351-1 (i.e. at least 3 mm lateral penetration in sapwood).

5.7.1 Materials requirements:

The following section:

Note:

The materials used for weather sealing between casements and frames must have a chemical structure and/or design assumed to possess such elastic properties that they will continue to provide a satisfactory seal against air and water ingress for a number of years under normally occurring changes in the size of the joint.

These requirements may be met by seals manufactured in rubber or rubberlike plastic shaped as hollow profiles or as lip seals. ~~For special purposes and rebate designs, wipe seals in metal or synthetic materials may also be assumed to meet the above property requirements. Contrary to those above, seals in foamed materials are assumed to meet the property requirements only in special cases.~~

~~In case of dispute concerning the suitability of the seals in terms of hardness, permanent deformation, weatherproofness and resistance to solvents and detergents, type testing in accordance with the test methods of the Norwegian Building Research Institute may be required. Overall, the test result must achieve the rating excellent.~~

Weather seals must not display a tendency to stick in connection with timber treatment and/or surface treatment carried out at the factory.

Is changed and amended:

Note:

The materials used for weather sealing between casements and frames must have a chemical structure and/or design assumed to possess such elastic properties that they will continue to provide a satisfactory seal against air and water ingress for a number of years under normally occurring changes in the size of the joint.

These requirements may be met by seals manufactured in rubber or rubberlike plastic shaped as hollow profiles, as lip seals or as duplex profiles (extruded using two different materials).

In case of dispute over the suitability of the seals in relation to the properties mentioned below, type testing in accordance with DS/EN 12365-1 may be requested. Overall, the results of this testing must prove performance to the following classifications:

- Working range, max. Class 4
- Compression, max. Class 2
- Temperature stability, meeting or exceeding Class 3
- Recovery characteristics, meeting or exceeding Class 2

Use class for recovery characteristics after ageing in accordance with EN 12365-4 will be added following a future revision of the standard.

Weather seals must be resistant to solvents and cleaning agents and not display a tendency to stick in connection with timber treatment and/or surface treatment carried out at the factory.

5.8.2 Fitting:

The following section:

Side hung units where the size or design (e.g. casement with glazing bars) causes particular risk of problems with closing and weathertightness should have a riser block fitted to the cill at the closing side. In the case of diagonally stable casement and door leaves the riser block may alternatively be fitted at the bottom of the frame at the hinge side.

Is amended:

At the jamb and head, the distance between frame and casement (clearance around the casement) must be adapted to the size of the window/door, the hardware system etc. It may be necessary to carry out adjustment when installing in the building but the unit must be designed for the distance between frame and casement to be as uniform as possible on all four sides when seen from the inside. Variations in distance should not exceed around 1.5 mm without justification.

5.9.1 Glass and panels:

The following section:

Panels require the use of materials which remain stable when exposed to humidity to ensure the panel construction remains permanently flat and tight.

Is amended:

As regards surface finish please consult the respective sections on materials.

The following applies to panels constructed from wood fibreboard:

The fibreboard material must meet or exceed all "symbol H" requirements (use in humid conditions), cf. DS/EN 316 and DS/EN 622-5 for MDF fibreboards.

When machining the fibreboard material (moulding and profiling) all horizontal traces must have an outward slope of at least 7°.

As regards board edges and edges resulting from moulding/profiling, corners must be rounded with a radius of at least 1.5 mm.

Units incorporating wood fibreboard panels must always be supplied with a completed surface treatment. The surface treatment requirements also apply to surfaces and edges which are not visible after the panelled unit has been assembled.

Panels must be incorporated in the unit in a manner which ensures moisture deformation of the panelling can be absorbed without causing damage.

Note:

MDF/HDF boards are dry process fibreboards. MDF boards must have a density of at least 650 kg/m³ and HDF boards a density of at least 800 kg/m³.

Machining (moulding and profiling) will expose the main core of the board whose properties deviate negatively from the unmachined surface.

To prevent damage to board-based panels the board material, surface treatment and assembly system should be well documented.

6.0 Dimensioning and weathertightness

The following section is deleted:

~~Window and door elements designed for sealed glazing units should be dimensioned to ensure the maximum calculated deflection at a pressure of 1200 Pa does not exceed 1/300th of the length of the edge of a glazing unit, however not exceeding 8 mm for bonded glazing units.~~

The following section:

Note:

~~The above dimensioning ensures that the glazing unit and the casement/frame the unit is installed in will withstand a high wind load. It should also be noted that, in the longer term, large opening casement windows will often be affected by functional problems. It is therefore advisable not to manufacture opening casements with an area in excess of 1.7 m^2 and an edge length in excess of 1.5 m. If exceeding these dimensions, particular attention must be paid to e.g. casement dimension, fitting of hardware, hinge design and number of fastening points. In side hung units particular attention must be paid to the height/width ratio.~~

When determining the external dimensions of the units, due attention must be paid to movements in the PVCu material caused by fluctuations in temperature. This applies in particular to dark coloured profiles, wide units or where several units are fitted side by side.

Is changed and amended:

Note:

Large opening casement windows may be affected by functional problems. It is therefore advisable not to manufacture opening casements with an area in excess of 1.7 m^2 and to restrict the length of the longest edge to 1.5 m. If exceeding these dimensions, particular attention should be paid to e.g. casement dimension, fitting of hardware, hinge design and number of fastening points. Furthermore, in the case of side hung casements, the height/width (side) ratio should be examined more closely.

When determining the external dimensions of the units, due attention must be paid to movements in the PVCu material caused by fluctuations in temperature. This applies in particular to dark coloured profiles, wide units or where several units are fitted side by side.

If, in the case of large units, it is deemed necessary to document the resistance to wind load in more detail, tests must be conducted in accordance with DS/EN 12211.

Classification requirements must be stated in accordance with DS/EN 12210.

Normative classification requirements under normal Danish conditions would be:

Class 3 for load
Class C for deflection.

6.2 Thermal performance:

The following section:

For external doors, values must given for a 1230 x 2180 mm standard size panelled door with two standard glazed lights and a mid-rail and a 1230 x 2180 mm flush door.

Is amended:

A standard glazing unit is defined as the most commonly used glazing unit in the product system in question.

The following numbers:

The temperature of the interior surfaces of the unit must not be less than ~~7~~°C provided there is a room temperature of 20°C and an external temperature of 0°C. This can be documented via calculations according to DS/EN ISO 10077-2.

Is changed to:

The temperature of the interior surfaces of the unit must not be less than 8.5°C provided there is a room temperature of 20°C and an external temperature of 0°C. This can be documented via calculations according to DS/EN ISO 10077-2.

The following section:

Note:

The minimum temperature of ~~7~~°C mentioned above means that condensation will only occur when the relative humidity of the air in the room exceeds ~~42~~ %. This is based on a room temperature of 20°C and an outside temperature of 0°C.

~~In dwellings and buildings with high humidity the consumer may wish to achieve a better condensation rating than is achieved through the above requirements. When such wishes are expressed, the window manufacturer ought to be able to document the surface temperature of the unit(s) in question when using sealed glazing units with warm edge spacers or other technology.~~

~~In connection with the development of new types of windows the aim should be for condensation standards to exceed the above requirements in every respect. This also applies to the surface temperature of weather seals.~~

Is changed and amended:

The above requirements regarding the minimum temperature of interior surfaces do not apply to window and door handles, lock cylinders and door cills.

Note:

The minimum temperature of 8.5°C mentioned above means that condensation will only occur when the relative humidity of the air in the room exceeds 48 %. This is based on a room temperature of 20°C and an outside temperature of 0°C.

For advice and guidance on indoor climate and ventilation of the dwelling, please consult your national asthma-allergy association as well as VinduesIndustrien's Installer and User Manual.

6.6.1 Materials requirements:

The following section:

In case of dispute concerning the suitability of the seals in terms of hardness, permanent deformation, weatherproofness and resistance to solvents and cleaning agents, type testing in accordance with ~~the test methods of the Norwegian Building Research Institute may be required~~. Overall, the test result must ~~achieve the rating excellent.~~

Is changed and amended:

In case of dispute concerning the suitability of the seals in terms of hardness, permanent deformation, weatherproofness and resistance to solvents and cleaning agents, type testing in accordance with DS/EN 12365-1 may be requested. Overall, the results of this testing must prove performance to the following classifications:

- Working range, max. Class 4
- Compression, max. Class 2
- Temperature stability, meeting or exceeding Class 3
- Recovery characteristics, meeting or exceeding Class 2

Use class for recovery characteristics after ageing in accordance with EN 12365-4 will be added following a future revision of the standard.

6.7.2 Fitting:

The following section:

If the fitting of a lock case etc. exceptionally requires drilling (machining) through to the glazing rebate, the access of condensation-causing air must be prevented by tape or otherwise.

Is amended:

When fitting casement fasteners with a base plate, care must be taken to ensure sufficient friction around the eye to prevent unintentional misalignment of the casement fastener. This can be done e.g. by drilling a tight hole for the eye thread in the casement section.

6.8.1 Glass and panels:

The following section:

Panels require the use of materials which remain stable when exposed to humidity to ensure the panel construction remains permanently flush and tight.

Is amended:

As regards surface finish please consult the respective sections on materials.

The following applies to panels constructed from wood fibreboard:

The fibreboard material must meet or exceed all "symbol H" requirements (use in humid conditions), cf. DS/EN 316 and DS/EN 622-5 for MDF fibreboards.

When machining the fibreboard material (moulding and profiling) all horizontal traces must have an outward slope of at least 7°.

As regards board edges and edges resulting from moulding/profiling, corners must be rounded with a radius of at least 1.5 mm.

Units incorporating wood fibreboard panels must always be supplied with a completed surface treatment. The surface treatment requirements also apply to surfaces and edges which are not visible after the panelled unit has been assembled.

Panels must be incorporated in the unit in a manner which ensures moisture deformation of the panelling can be absorbed without causing damage.

Note:

MDF/HDF boards are dry process fibreboards. MDF boards must have a density of at least 650 kg/m³ and HDF boards a density of at least 800 kg/m³.

Machining (moulding and profiling) will expose the main core of the board whose properties deviate negatively from the unmachined surface.

To prevent damage to board-based panels the board material, surface treatment and assembly system should be well documented.

7.0 Dimensioning and weathertightness

The following section is deleted:

~~Window and door elements designed for sealed glazing units should be dimensioned to ensure the maximum calculated deflection at a load of 1200 Pa does not exceed 1/300th of the length of the edge of a glazing unit, however not exceeding 8 mm for bonded glazing units.~~

The following section:

Note:

~~The above dimensioning ensures that the glazing unit and the casement/frame the unit is installed in will withstand a high wind load. It should also be noted that, in the longer term, large opening casements will often be affected by functional problems. It is therefore advisable not to manufacture opening casements with an area in excess of 1.7 m^2 and an edge length in excess of 1.5 m. If exceeding these dimensions, particular attention must be paid to e.g. casement dimension, fitting of hardware, hinge design and number of fastening points. In side hung units particular attention must be paid to the height/width ratio.~~

Is changed to:

Note:

Large opening casement windows may be affected by functional problems. It is therefore advisable not to manufacture opening casements with an area in excess of 1.7 m^2 and to restrict the length of the longest edge to 1.5 m. If exceeding these dimensions, particular attention should be paid to e.g. casement dimension, fitting of hardware, hinge design and number of fastening points. Furthermore, in the case of side hung casements, the height/width (side) ratio should be examined more closely.

If, in the case of large units, it is deemed necessary to document the resistance to wind load in more detail, tests must be conducted in accordance with DS/EN 12211.

Classification requirements must be stated in accordance with DS/EN 12210.

Normative classification requirements under normal Danish conditions would be:
Class 3 for load
Class C for deflection.

7.2 Thermal performance:

The following section:

For external doors, values must given for a 1230 x 2180 mm standard size panelled door with two standard glazed lights and a mid-rail and a 1230 x 2180 mm flush door.

Is amended:

A standard glazing unit is defined as the most commonly used glazing unit in the product system in question.

The following numbers:

The temperature of the interior surfaces of the unit must not be less than ~~7°C~~ provided there is a room temperature of 20°C and an external temperature of 0°C. This can be documented via calculations according to DS/EN ISO 10077-2.

Is changed:

The temperature of the interior surfaces of the unit must not be less than 8.5°C provided there is a room temperature of 20°C and an external temperature of 0°C. This can be documented via calculations according to DS/EN ISO 10077-2.

The following section:

Note:

The minimum temperature of ~~7°C~~ mentioned above means that condensation will only occur when the relative humidity of the air in the room exceeds ~~42 %~~. This is based on a room temperature of 20°C and an outside temperature of 0°C.

~~In dwellings and buildings with high humidity the consumer may wish to achieve a better condensation rating than is achieved through the above requirements. When such wishes are expressed, the window manufacturer ought to be able to document the surface temperature of the unit(s) in question when using sealed glazing units with warm edge spacers or other technology.~~

~~In connection with the development of new types of windows the aim should be for condensation standards to exceed the above requirements in every respect. This also applies to the surface temperature of weather seals.~~

Is changed and amended:

The above requirements regarding the minimum temperature of interior surfaces do not apply to window and door handles, lock cylinders and door cills.

Note:

The minimum temperature of 8.5°C mentioned above means that condensation will only occur when the relative humidity of the air in the room exceeds 48 %. This is based on a room temperature of 20°C and an outside temperature of 0°C.

For advice and guidance on indoor climate and ventilation of the dwelling, please consult your national asthma-allergy association as well as VinduesIndustrien's Installer and User Manual.

7.5.1 Coating of aluminium:

The following section:

Pre-treatment and coating must meet the requirements of GSB AL 631, including the requirements regarding protection against filiform corrosion. The company must be affiliated to the GSB or another similar inspection and control body.

Is amended:

The requirement regarding protection against filiform corrosion does not apply to panels and other boards where there is no physical contact between two or more pieces of raw aluminium.

7.5.2 Anodizing of aluminium:

The following section:

The colour of profiles in the same order must not deviate so much as to be immediately apparent when looking at the surface from a distance of 3 metres with incident light perpendicular to the surface. The light must be diffuse daylight coming from a northerly direction.

Is amended:

For documentation and control purposes reference sheets as indicated in DS/EN 12373-1. chapt. 9.2: 2001 may be used.

7.6.1 Materials requirements:

The following section:

In case of dispute concerning the suitability of the seals in terms of hardness, permanent deformation, weatherproofness and resistance to solvents and cleaning agents, type testing in accordance with ~~the test methods of the Norwegian Building Research Institute may be required~~. Overall, the test result must ~~achieve the rating excellent.~~

Is changed and amended:

In case of dispute concerning the suitability of the seals in terms of hardness, permanent deformation, weatherproofness and resistance to solvents and cleaning agents, type testing in accordance with DS/EN 12365-1 may be requested. Overall, the results of this testing must prove performance to the following classifications:

- Working range, max. Class 4
- Compression, max. Class 2
- Temperature stability, meeting or exceeding Class 3
- Recovery characteristics, meeting or exceeding Class 2

Use class for recovery characteristics after ageing in accordance with EN 12365-4 will be added following a future revision of the standard.

7.7.2 Fitting of hardware:

The following section:

If the fitting of a lock case etc. exceptionally requires drilling (machining) through to the glazing rebate, the access of condensation-causing air must be prevented e.g. by taping.

Is amended:

When fitting casement fasteners with a base plate, care must be taken to ensure sufficient friction around the eye to prevent unintentional misalignment of the casement fastener. This can be done e.g. by drilling a tight hole for the eye thread in the casement section.

7.8.1 Glass and panels:

The following section:

Panels require the use of materials which remain stable when exposed to humidity to ensure the panel construction remains permanently flush and tight.

Is amended:

As regards surface finish please consult the respective sections on materials.

The following applies to panels constructed from wood fibreboard:

The fibreboard material must meet or exceed all "symbol H" requirements (use in humid conditions), cf. DS/EN 316 and DS/EN 622-5 for MDF fibreboards.

When machining the fibreboard material (moulding and profiling) all horizontal traces must have an outward slope of at least 7°.

As regards board edges and edges resulting from moulding/profiling, corners must be rounded with a radius of at least 1.5 mm.

Units incorporating wood fibreboard panels must always be supplied with a completed surface treatment. The surface treatment requirements also apply to surfaces and edges which are not visible after the panelled unit has been assembled.

Panels must be incorporated in the unit in a manner which ensures moisture deformation of the panelling can be absorbed without causing damage.

Note:

MDF/HDF boards are dry process fibreboards. MDF boards must have a density of at least 650 kg/m³ and HDF boards a density of at least 800 kg/m³.

Machining (moulding and profiling) will expose the main core of the board whose properties deviate negatively from the unmachined surface.

To prevent damage to board-based panels the board material, surface treatment and assembly system should be well documented.

8.0 Dimensioning and weathertightness

The following section is deleted:

~~Window and door elements designed for sealed glazing units should be dimensioned to ensure the maximum calculated deflection at a pressure of 1200 Pa does not exceed 1/300th of the length of the edge of a glazing unit, however not exceeding 8 mm for bonded glazing units.~~

The following section:

Note:

~~The above dimensioning ensures that the glazing unit and the casement/frame the unit is installed in will withstand a high wind load. It should also be noted that, in the longer term, large opening casement windows will often be affected by functional problems. It is therefore advisable not to manufacture opening casements with an area in excess of 1.7 m^2 and an edge length in excess of 1.5 m. If exceeding these dimensions, particular attention must be paid to e.g. casement dimension, fitting of hardware, hinge design and number of fastening points. In side hung units particular attention must be paid to the height/width (side) ratio.~~

If weathertightness testing of windows and doors is required, tests shall be based on the following standards:

Is amended:

Note:

Large opening casement windows may be affected by functional problems. It is therefore advisable not to manufacture opening casements with an area in excess of 1.7 m^2 and to restrict the length of the longest edge to 1.5 m. If exceeding these dimensions, particular attention should be paid to e.g. casement dimension, fitting of hardware, hinge design and number of fastening points. Furthermore, in the case of side hung casements, the height/width (side) ratio should be examined more closely.

If, in the case of large units, it is deemed necessary to document the resistance to wind load in more detail, tests must be conducted in accordance with DS/EN 12211.

Classification requirements must be stated in accordance with DS/EN 12210.

Normative classification requirements under normal Danish conditions would be:

Class 3 for load
Class C for deflection.

If weathertightness testing of windows and doors is required, tests shall be based on the following standards:

8.2 Thermal performance:

The following section:

For external doors, values must given for a 1230 x 2180 mm standard size panelled door with two standard glazed lights and a mid-rail and a 1230 x 2180 mm flush door.

Is amended:

A standard glazing unit is defined as the most commonly used glazing unit in the product system in question.

The following section:

Note:

The minimum temperature of ~~7~~°C mentioned above means that condensation will only occur when the relative humidity of the air in the room exceeds ~~42~~ %. This is based on a room temperature of 20°C and an outside temperature of 0°C.

~~In dwellings and buildings with high humidity the consumer may wish to achieve a better condensation rating than is achieved through the above requirements. When such wishes are expressed, the window manufacturer ought to be able to document the surface temperature of the unit(s) in question when using sealed glazing units with warm edge spacers or other technology.~~

~~In connection with the development of new types of windows the aim should be for condensation standards to exceed the above requirements in every respect. This also applies to the surface temperature of weather seals.~~

Is changed and amended:

The above requirements regarding the minimum temperature of interior surfaces do not apply to window and door handles, lock cylinders and door cills.

Note:

The minimum temperature of 8.5° C mentioned above means that condensation will only occur when the relative humidity of the air in the room exceeds 48 %. This is based on a room temperature of 20°C and an outside temperature of 0°C.

For advice and guidance on indoor climate and ventilation of the dwelling, please consult your national asthma-allergy association as well as VinduesIndustrien's Installer and User Manual.

8.3.4 Additional definitions and requirements for workpieces in softwood:

The following section:

~~***Finger joints:***~~

Is now a new chapter:

8.3.5 Finger joints

The following section:

Finger joints ~~across the full cross-section~~ of end-jointed profiles may be used subject the following conditions:

The profile of the joint must comply with DIN 68140.

Is changed and amended:

Finger-jointing of end-jointed profiles is permitted on the following conditions:

The profile of the joint must comply with DIN 68140 or a similar, recognized standard.

The following section:

Approved work instructions and forms for the recording of inspection and test data must be available for all the inspection and testing activities mentioned. All data record forms must be kept for at least ~~5~~ years and be accessible to external inspectors.

Is amended:

Approved work instructions and forms for the recording of inspection and test data must be available for all the inspection and testing activities mentioned. All data record forms must be kept for at least 10 years and be accessible to external inspectors.

The following section:

If finger-jointed timber is sourced from a subcontractor, the subcontractor/ manufacturer must be affiliated to ~~the KSL inspection (Danish Glulam Quality Control Organization) or a similar external inspection scheme~~ and the profiles labelled in accordance with the rules of this ~~organization~~.

Is amended:

If finger-jointed timber is sourced from a subcontractor, the subcontractor/ manufacturer must be affiliated to an impartial body approved by VinduesIndustrien and the profiles labelled in accordance with the rules of this body so as to ensure traceability.

The following section:

~~***Laminated timber:***~~

Is now a new chapter:

8.3.6 Lamination

The following section is deleted:

~~Both frame and casement timbers may be glue laminated from smaller laminates. In laminated profiles each laminate in the hatched areas of Annex 10 illustrations must have a heartwood proportion of at least 60%.~~

~~It is optional for laminations to be made with the glue line located parallel or perpendicular to the external surface of the profile.~~

~~Where laminations incorporate laminates which are not directly visible, these laminates may be of a lower quality of wood in respect of knots and similar visual faults than is required for solid wood profiles.~~

~~On weather exposed faces the distance from the surface to the first glue line parallel to the surface must be at least 6 mm.~~

~~Laminated profiles must be manufactured and subjected to in-house inspection in accordance with the "Technical Requirements for the manufacture and inspection of KSL glued laminated timber for windows and external doors".~~

~~In the case of companies not subjected to KSL inspections an external inspection of their glulam manufacture as stipulated in 10.3.1 of the KSL Technical Requirements will be conducted during an inspection visit in connection with product certification.~~

~~The labelling requirement under point 11 of the KSL Technical Requirements does not apply to companies manufacturing glued laminated joinery profiles for their own use.~~

~~If laminated profiles are sourced from a subcontractor, the subcontractor/ manufacturer must be affiliated to the KSL inspection or a similar external inspection scheme and the profiles labelled in accordance with the rules of the scheme.~~

~~The laminating of timber species other than softwood is permitted provided it can be documented on the basis of testing or existing evidence that satisfactory joint properties can be achieved.~~

~~Profiles laminated from more than one timber species must meet the same requirements as profiles laminated from one timber species only.~~

The following section is amended:

In laminated profiles, which receive a base coat and surface treatment in accordance with treatment systems 1, 2 or 5, each laminate in the hatched areas of Annex 10 illustrations must have a heartwood proportion of at least 60 %.

In profiles treated in accordance with treatment system 2 ØKO, each laminate in the hatched areas of Annex 10 illustrations must have a heartwood proportion of at least 90 %.

Lamination of non-softwood timber species is permitted, provided it can be demonstrated at both the internal, in-house inspection and the external inspection that the applicable performance requirements have been met.
The same applies to laminated profiles constructed from different timber species.

Note:

In terms of the stability and durability of laminated profiles it is essential to take into account that the tangential moisture deformation of (backsawn) timber can be up to twice the radial moisture deformation (quartersawn timber).
The basic principles of constructing laminated profiles are listed in DS/EN 13307-1, Annex A.

Prior to lamination, the individual laminates must be conditioned to room temperature and a moisture content of 12 ± 2 %.

As regards visual defects etc. the completed laminated profiles are subject to the same requirements as solid timber profiles.

When bonding with thermoplastic wood adhesives the adhesive must be classified as Class D4 in accordance with DS/EN 204 (tested in accordance with DS/EN 205).
When bonding with thermosetting wood adhesives the adhesive must be classified as Class C4 in accordance with DS/EN 12765 (tested in accordance with DS/EN 205).

The bonding process must be completed in accordance with the adhesive supplier's instructions for the type/variant of adhesive used.

Note:
In laminated profiles where the glue lines of the completed window/door assembly are directly exposed to the weather (water and sun) the use of Class C4 (thermosetting) adhesive is recommended.

In-house inspection and checking:

The manufacturer's own in-house inspections must comprise at least the following activities:

- checking the climatic conditions in manufacturing hall and warehouse.
- checking the moisture content of pre-production timber
- checking the moisture content of laminates ready for bonding
- checking laminate thickness
- checking the adhesive dosing
- checking the lamination process (pressing time, temperature, pressure)

Instructions on how to conduct the checks and forms for the recording of the resulting data must be available for all checking and inspection activities. It must be evident from the recorded data whether the activities checked meet the specified requirements.
Performance requirements*:*

The manufacturing hall and warehouse temperature must be maintained at a minimum of 15ºC and the humidity of the ambient air must be controlled to ensure the timber maintains the specified moisture content. (Recommended values are a temperature of 20ºC and humidity in the range 55 – 65 %).
Moisture content of timber and laminates ready for bonding: 12 ± 2 %.
Maximum deviation of individual laminates from mean thickness: +/- 0,1 mm. This applies to the laminate both lengthwise and crosswise.
The dosing of adhesive must comply with the adhesive supplier's instructions.
The lamination process must comply with the instructions which must be provided by the suppliers of lamination equipment and adhesives.

Inspection frequency:

Climatic conditions must be recorded twice per working day/shift.
Timber moisture content must be recorded on taking delivery and again prior to further processing.
The moisture content of laminates ready for bonding must be recorded twice per working day/shift.

Laminate thickness must be checked at least twice per working day/shift. Additional checks must be performed after each tool change and resetting for different dimensions.
Adhesive dosing must be checked at least once per working day/shift.
The lamination process must be checked at least twice per working day/shift.
Checking and registration of individual sub-processes must follow the instructions which must be provided by the suppliers of adhesive and lamination equipment.

The extent of in-house checking and inspection activities and the number of items checked as well as the frequency of checks for each individual activity must comply with the procedures approved by the external inspection body.
Similarly, the way inspection data is recorded must be approved by the external inspection body.

All data record forms must be kept for at least 10 years and be accessible to external inspectors.

In-house testing:

The strength of glue lines must be tested in-house. This can take the form of shear testing or splitting of glue lines.

Shear testing must be conducted in accordance with DS/EN 392 and the breaking stress recorded.

The splitting of glue lines is conducted on 40 mm long test samples using a chisel or wood chisel and the percentage of wood failure recorded.

Sampling must be conducted at least twice per working day/shift, each time selecting at least 3 samples per bonding process line.

Performance requirements:

Shear testing must produce a mean breaking stress value for glue lines of at least 6 N/mm² for each test sample.
When splitting glue lines the split surfaces must exhibit at least 90 % wood failure.

Both test methods are subject to the stipulation that dated tests from the previous five days' production must be kept and be accessible to external inspectors.
The requirements in respect of test results, the extent and frequency of testing as well as the recording of test results must be specified in procedures approved by the external inspection body.

External inspection:

The external inspection must comprise at least the following:

- checking and, if required, testing the accuracy of the manufacturer's measuring equipment
- examining the results of the manufacturer's own in-house inspections
- examining the results of the manufacturer's own in-house testing
- inspecting the documentation for the classification of adhesives used
- selecting samples for external testing.

External testing:

At the external inspection, 6 laminated profiles are selected from each bonding process line. From each of these profiles, a 600 mm long sample is cut and sent for testing at an accredited

laboratory.
From each of these 600 mm long samples the laboratory will cut 3 test samples, each 75 mm in length, to use for delamination testing in accordance with DS/EN 391 as well as 3 test samples for the testing of glue line strength in accordance with DS/EN 392.

Delamination testing

If thermoplastic adhesive D4 has been used in the lamination, the cut-out test samples are put through a test cycle in accordance with DS/EN 391, method C.

Performance requirements:

Max. 20 % delamination as an average for the test samples from the same 600 mm sample.

If thermosetting adhesive C4 has been used in the lamination, the cut-out test samples are put through a test cycle in accordance with DS/EN 391, method A.

Performance requirements:

Max. 5 % delamination after 2 initial cycles or max. 10 % delamination after 1 extra cycle as an average for the test samples from the same 600 mm sample.

For both adhesive types the delamination percentage is calculated on the basis of the total delamination length in relation to the total glue line length on the two end grain surfaces.

Testing glue line strength:

The test is conducted as a shear test in accordance with DS/EN 392, completing tests on 3 test samples from each of the 600 mm long samples received.

Performance requirements:

Glue line breaking stress must be at least 6N/ mm² as an average for the test samples from the same 600 mm sample.

Requirements for external inspections:

In the case of window manufacturers affiliated to DVC/Dansk Vindues Certificering (the Danish window certification body) and manufacturing their own laminated profiles, external inspections are conducted along with the biannual or annual DVC-inspections.
At each external inspection samples are selected and sent for external testing at an accredited laboratory.

In the case of other manufacturers of laminated profiles who act as suppliers to window manufacturers affiliated to the DVC, external inspections must be conducted by an impartial body approved by VinduesIndustrien.
Manufacturers are paid two annual inspection visit. At each of these, samples are selected and sent for external testing at an accredited laboratory.
If the requirements are not met, fresh samples are collected by the inspection body for testing at an accredited laboratory. If these samples also fail to meet requirements, the inspection body will decide on what action to take.
If deemed necessary by this body, the approval must be revoked until compliance with the requirements has been re-established.

Labelling:

Laminated profiles from suppliers must carry a clear supplier's label (name/logo) and the time of manufacture (week and year).

8.6.1 Coating of aluminium:

The following section:

Pre-treatment and coating must meet the requirements of GSB AL 631, including the requirements regarding protection against filiform corrosion. The company must be affiliated to the GSB or another similar inspection and control body.

Is amended:

The requirement regarding protection against filiform corrosion does not apply to panels and other boards where there is no physical contact between two or more pieces of raw aluminium.

8.6.2 Anodizing of aluminium:

The following section:

The colour of profiles in the same order must not deviate so much as to be immediately apparent when looking at the surface from a distance of 3 metres with incident light perpendicular to the surface. The light must be diffuse daylight coming from a northerly direction.

Is amended:

For documentation and control purposes reference sheets as indicated in DS/EN 12373-1. chapt. 9.2: 2001 may be used.

8.7.1 Materials requirements:

The following section:

In case of dispute concerning the suitability of the seals in terms of hardness, permanent deformation, weatherproofness and resistance to solvents and cleaning agents, type testing in accordance with the test methods of ~~the Norwegian Building Research Institute may be required~~. Overall, the test result must ~~achieve the rating excellent.~~

Is changed and amended:

In case of dispute concerning the suitability of the seals in terms of hardness, permanent deformation, weatherproofness and resistance to solvents and cleaning agents, type testing in accordance with the test methods of DS/EN 12365-1 may be requested. Overall, the results of this testing must prove performance to the following classifications:

- Working range, max. Class 4
- Compression, max. Class 2
- Temperature stability, meeting or exceeding Class 3
- Recovery characteristics, meeting or exceeding Class 2

Use class for recovery characteristics after ageing in accordance with EN 12365-4 will be added following a future revision of the standard.

8.8.2 Fitting of hardware:

The following section:

If the fitting of a lock case etc. exceptionally requires drilling (machining) through to the glazing rebate, the access of condensation-causing air must be prevented e.g. by taping.

Is amended:

When fitting casement fasteners with a base plate, care must be taken to ensure sufficient friction around the eye to prevent unintentional misalignment of the casement fastener. This can be done e.g. by drilling a tight hole for the eye thread in the casement section.

8.9.1 Glass and panels:

The following section:

Panels require the use of materials which remain stable when exposed to humidity to ensure the panel construction remains permanently flush and tight.

Is amended:

As regards surface finish please consult the respective sections on materials.

The following applies to panels constructed from wood fibreboard:

The fibreboard material must meet or exceed all "symbol H" requirements (use in humid conditions), cf. DS/EN 316 and DS/EN 622-5 for MDF fibreboards.

When machining the fibreboard material (moulding and profiling) all horizontal traces must have an outward slope of at least 7°.

As regards board edges and edges resulting from moulding/profiling, corners must be rounded with a radius of at least 1.5 mm.

Units incorporating wood fibreboard panels must always be supplied with a completed surface treatment. The surface treatment requirements also apply to surfaces and edges which are not visible after the panelled unit has been assembled.

Panels must be incorporated in the unit in a manner which ensures moisture deformation of the panelling can be absorbed without causing damage.

Note:

MDF/HDF boards are dry process fibreboards. MDF boards must have a density of at least 650 kg/m³ and HDF boards a density of at least 800 kg/m³.

Machining (moulding and profiling) will expose the main core of the board whose properties deviate negatively from the unmachined surface.

To prevent damage to board-based panels the board material, surface treatment and assembly system should be well documented.

Chapter 9. Annexes at a glance

The following list

Annex no.	**Subject area:**
~~15 Standards at a glance~~	
~~16 Technical Requirements - current and previous editions~~	

Is amended and changed to:

Annex no.	**Subject area:**
15 Insurance cover checklist	
16 Standards at a glance	
17 Technical Requirements - current and previous editions	

Annex 8 page 3. Recording and evaluation of samples.

The following section:

In addition to the ratings for specific defects for each group of materials given on the following pages the following ratings apply to general defects:

Is amended:

- Non-compliance with section 2.9 Consumer safeguards	Critical defect

Annex 11. Paradigm for the declaration of pine/larch

The following section:

that the density is above 500 kg/m³ (12 ±2 % moisture)

Is amended:

(for finger-jointed timber a density above 480 kg/m³)

The following Annex is new:

Annex 15

Insurance cover checklist

Certified companies must have commercial and product liability insurance as well as warranty insurance providing at least the following coverage.
Please note that the checklist is a translation of extracts of the original insurance conditions in Danish. In case of dispute, the Danish original shall be considered final and conclusive.

The insured	Name Address Postal code and town CVR (Central Business Register no.)			
Insured risk (it's important that the text corresponds to the activities of the company)	Manufacture of windows and doors in timber, PVCu and aluminium and/or a combination of these materials and related products and building activities.			
Summary of coverage (compulsory areas)	Commercial liability, product liability, risk avoidance, pollution liability, loss/damage caused by ingredients/components, treatment/processing, recall, warranty.			
Geographical area	Commercial and product liability - at least Europe			
Sums insured (minimum)	DKK	10,000,000	Per claim and year under commercial and product liability	
	DKK	2,000,000	Per claim under pollution liability	
	DKK	10,000,000	Per year for property damage caused by ingredients/components	
	DKK	5,000,000	Per year for pecuniary or financial loss caused by ingredients/components	
	DKK	5,000,000	Per year for treatment/processing	
	DKK	1,000,000	Risk avoidance	
	DKK	5,000,000	Recall	
	DKK	1,000,000	Warranty, subject to a max. of DKK200,000 per claim and a max. of DKK10,000 per unit	
Excess (maximum)	DKK	5,000	Any one claim under commercial liability	
	DKK	10,000	Any one claim under product liability	
	DKK	10,000	Any one claim under pollution liability	
	DKK	10,000	Any one claim for damage/loss caused by ingredients/components	
	DKK	5,000	Any one claim under risk avoidance costs	
	DKK	25,000	Any one claim under recall cover	
Please note:				
Treatment/ processing	The insurance shall be extended to include cover for damage to items which the insured has undertaken to finish, mount, repair, fit or to treat or process in some other way, irrespective of whether the damage occurs during or after the performance of the task.			
Care and custody	Notwithstanding article 2, (2) (b) and article 3, (2) (e) of the general insurance terms this insurance shall cover the liability of the insured for loss of or damage to property for which the insured is liable because these items are in his custody or have been entrusted to the insured in some other way as part of his business.			
Warranty	The warranty shall cover window/door units delivered over a period of time stretching back no more than five years. The warranty shall cover individual window/door units for five years from the date of delivery. The warranty shall comprise run-off cover with unchanged sums for window/door units which were supplied in the preceding five years.			
Inspection date				
Inspected by				

Annex number is changed to:

Annex 16. Standards at a glance

The following section is deleted:

~~Norsk Byggforskn.~~	~~Testing of weather seals~~	~~40, 49, 58~~	~~NBI~~

The following section is amended:

DS/EN 12365	Part 1-4: Building hardware. Gasket and weatherstripping for doors, windows, shutters and curtain walling	43,52,60,87	
DS/EN 14609	Determination of the resistance to static torsion	3	TI*

Annex number is changed to:

Annex 17. Technical Requirements - current and previous editions

The following section:

7th Edition - January 2008

Is amended:

7th Edition, Rev. 1 - December 2008