NDVK

NORSK DØR- OG VINDUSKONTROLL

Rules for certification and product marking

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Part 1 About the Norwegian door and window control (NDVK)

1.1 Organization

The Norwegian door and window control (NDVK) is a voluntary approval and marking scheme for windows for use in external walls, window doors and external pedestrian doorsets manufactured for and sold in the Norwegian market in accordance with the European Construction Products Regulation (CPR), the Norwegian Regulations on Documentation of construction products ("Byggevareforskriften – DOK") and the harmonized product standard NS-EN 14351-1.

The scheme is organized as a membership association where manufacturers of products as mentioned above can apply for membership. The scheme is not limited to manufacturers with production in Norway or with a Norwegian business address. There requirements are independent of the material the doors and windows are made of.

A certificate and right to mark products are awarded to members based on third party assessment and approval by:

1. Initial and periodic assessment of the member's internal production control and quality management system (the production control),
2. Assessment of marked products' Declaration of Performance against *NDVK Requirements for doors and windows* and limit values for suitability for use in Norway according to the Norwegian Regulations on technical requirements for construction works ("Byggteknisk forskrift – TEK 17"),
3. Initial and periodic third-party control testing of marked products' performance (control testing).

Windows and external pedestrian doorsets are classified as construction products and are CE marked under the Construction Products Regulation and Norwegian Regulations on Documentation of construction products. CE-marked construction products shall bedelivered with a Declaration of Performance. NDVK certification and marking does not replace CE marking, but is a voluntary supplement.

Windows and external pedestrian doorsets without requirements for fire resistance are placed in system for assessment and verification of performances (AVCP) 3, which means that all documentation for the Declaration of Performance shall be issued by a notified body.

For products in AVCP system 3, there is no requirement for a third-party verification of the manufacturer's own factory production control (FPC), but this is included in the NDVK approval scheme. In addition, periodic control testing of the finished window's performance is required to ensure consistently verify the performance of the marked products.

1.2 Control principles

1.2.1 Random check

Both the production control described in Part 4 and the control testing in Part 5 are based on random sample control.

1.2.2 Control of standard products

Verification of performances and control testing are based on testing of Standard Product types, hereby referred to as just products. A Standard Product is defined based on the product's opening function.

The different opening functions defined in Annex A are considered unique based on intended use, opening and closing mechanism, stop and seal, hardware and fitting solution, load on hardware/fittings, etc.

Certain standard products can be combined during testing. This is described further in Part 5.

Part 2 Membership

2.1 Criteria for membership

Membership in NDVK is granted to manufacturers of windows and/or external pedestrian doorsets in accordance with the harmonized product standard NS-EN 14351-1. Other economic operators such as importers, sales offices etc. cannot be members as they do not have a production that can be covered by the Production Control.

Otherwise, see obligations and rights for membership in the NDVK Articles of Association.

2.2 Prerequisites for membership

Requirements are placed on the extent of the control of each member. At least half of the range of openable standard products produced and delivered to the Norwegian market (50% rule) shall be qualified for marking.

Qualified for marking means that the products are listed in the certificate and is included in periodic control testing.

I addition to this, products qualified for marking shall account for at least 80% of the total volume in units delivered to the Norwegian market (80% rule).

Furthermore, requirements are placed on the member's financial situation in order to assess whether the member is able to handle its warranty obligations in the event of a dispute against the member's customers.

Requirements for membership are described in more detail under Part 3.

2.3 Approval process

The approval process includes the following steps:

Some steps can be performed in a different order and /or in parallel. Each step is described in more detail in the following sections.

2.3.1 Application for membership in NDVK

Applications for membership shall besent to the secretariat for NDVK. The application forms the basis for an assessment of the manufacturer's products based on the available documentation.

The application contain:

- Description of the manufacturer
  - Number of production sites that produce for the Norwegian market
  - Turnover and solvency for the last available financial year
  - Contact person for NDVK at the manufacturer
- Description of production (at each production location)
  - Address and contact person
  - List of *all* products produced for the Norwegian market
  - Information on production volume for the products
  - Number of person-years in production and production management at the production site
- Description of and documentation for standard products intended to be listed in the certificate:
  - Declaration of performance
  - Test reports for initial type testing issued by a notified body
  - Complete set of technical drawings with measures
  - Installation manual
  - Maintenance and user manual ("FDV-dokumentasjon")

Separate requirements for the points above are described in more detail in the following sections. See also separate forms in the attachments.

2.3.2 Processing of application

The secretariat will manage the application itself or through an independent third party. The application is not formally addressed and handled until it is complete.

Eventual costs for third-party assessment are covered by the manufacturer, and up to NOK 30 000 may be deducted from the registration fee upon enrollment.

2.3.3 Initial control visit

When the application is complete and processed, an initial control visit to each production site shall becarried out to assess the manufacturer's quality system, internal factory production control (FPC) and HSE/internal control.

The initial production control is otherwise carried out as described in section 2.4 and Part 4.

2.3.4 Initial product control

Initial Product Control tests may apply if the manufacturer cannot show test reports dated within the last 2–3 years. The secretariat can demand a new test if the report is older than 2 years and 6 months.

Documentation of initial product control shall beissued from a notified body (see Part 5). Otherwise, see requirements for control testing in section 2.5 and Part 5.

2.3.5 Approval of membership

The board of NDVK shall formally approve new members. Upon approval, an approval agreement is drawn up which is signed by both parties.

2.3.6 Publishing of Certificate and Membership label

When a signed membership agreement is in place, the certificate and Membership label is published on the NDVK website (https://ndvk.no) The Membership label is also provided digitally to the member.

The member can use the Membership label for marking products listed in the certificate, on own websites, etc. in accordance with NDVK's Articles of Association and this document.

2.4 Periodic production control

2.4.1 Annual production control

Approved production control is a prerequisite for approval. The production control shall verify compliance between the member's quality management system and internal factory production control (FPC) and this document and NDVK Requirements for doors and windows.

The manufacturer/member is controlled through an annual control visit to each of the member's production site(s). Control visits are normally carried out by a third party. The secretariat appoints an inspector for the member.

Members are distributed to third-party auditors during the first quarter of each year. The time for the actual control visit is agreed between the member and the relevant auditor.

It is the member's duty to correct non-conformities discovered during the production control visit. Deadlines for closure of non-conformities are set by the inspectors and shall bereasonable. Failure to close non-conformities within set deadlines can trigger extended control of the member (see next section).

The production control is described in more detail under Part 4.

2.4.2 Extended production control

If the member is subject to extended production control, the production control includes two control visits per year. Extended production control ceases when the member has two consecutive approved control visits.

Significant non-conformities that persist after two consecutive visits during intensified control form the basis for exclusion.

2.5 Periodic control testing

Approved control testing of products listed in the certificate is a prerequisite for the approval. The control testing shall regularly verify compliance between documented and declared performance.

Products listed in the certificate shall be tested at least every two years for the properties listed in the certificate. Control testing shall becarried out by a notified body, see more under Part 5.

Products for testing are sampled according to a sampling schedule issued by the secretariat. Ordinary control testing shall, at least, be carried out, and preferably reported, by the end of the assigned control year.

The manufacturer is responsible for procuring control testing within due time.

Requirements for the control testing itself are described in Part 5.

2.6 Changes to the certificate

Members can add or remove products listed in the certificate according to the rules for the membership as described in Part 3.

Notice on removal of products listed in the certificate shall be sent to the Secretary. The removal is assessed against prerequisites for membership as described in 3.2.2 and 3.2.3.

Inclusion of new products shall be sent to the Secretary together with documentation as described under 2.3.1.

2.7 Financial obligations

The scheme is financed by the members through the following fees:

- Connection fee. One time fee that is paid when a trademark is granted.

- Membership fee. Annual fee determined by the General Meeting. The membership fee consists of:
  - Fixed fee per manufacturer
  - Fixed fee per production site
  - Variable fee based on the number of man-years at each production site
  - Fixed travel allowance for production sites abroad
- Costs associated with extended production control

Costs for product control testing are not included in the membership fee. Where NDVK mediates Control Testing through SINTEF, the costs are invoiced without surcharge.

Costs for extended control, retesting of products with rejected test results, additional type testing or production control beyond standard intervals, shall becovered in full by the member.

Missing payment of membership fees after the second reminder of invoices form reasons for exclusion.

2.8 Right to mark products

Members are granted the right to mark products listed in the certificate. Products qualified for marking can be marked with a granted Membership Label with the member's certificate number. The Membership Label design and layout are given in the Articles of Association.

The manufacturer can use the granted Membership Label on products and on websites, in brochures, product documentation, advertising material etc.

Where used in connection with specific products it shall only be used in direct connection to products listed in the certificate.

Use of the NDVK mark as mentioned above also applies to the marketing of branded products in the retail trade, through product databases and other third-party sales channels.

Misuse of the NDVK mark, for example when used for purposes other than those outlined above, labeling of products without trademark rights, or other misleading use, form reasons for exclusion after a second reminder on changed labeling.

Part 3 Requirements for the Manufacturer and prerequisites for marking rights

3.1 Management requirements

3.1.1 Internal control system

The manufacturer shall have an operational internal control system for HSE and the working environment as required by national legislation in the country of each production site. The internal control system can be part of a more comprehensive management system or a separate system.

The internal control system shall include:

- Descriptions of requirements for HSE and working environment for the employees
- The manufacurer's routines for follow-up of HSE and the working environment

The annual production control will audit the presence of an internal control system, but the content of the system and its compliance with national regulations for HSE and work environment is not audited.

3.1.2 Quality management system

The manufacturer shall have a written quality management system that sets frameworks and guidelines for the sale, planning, production and delivery of windows and/or external pedestrian doorsets.

The scope of and requirements for the quality management system are described inPart 6.

The quality management system can be part of a more comprehensive management or internal control system or be separate.

There is no requirement that the manufacturer follow a specific quality management system such as ISO 9001, LEAN or other named systems for monitoring production. Several such systems can be used as a basis for the factory's own production control.

3.1.3 Storage of quality data

All relevant quality data shall bekept for at least the longest of:

- The manufacturer's longest product related warranty (sales warranty, rot warranty etc.),
- Requirements for the storage of such data in national accounting and company legislation, or
- 10 years.

Quality data means:

- Any dates related to production,
- Product type,
- Serial number, order number etc.,
- Who registered the content,
- Results of any controls/tests, and
- Procedure in the event of any non-conformities.

3.2 Scope of approval

3.2.1 Scope of the production control

The production control shall cover the entire production of windows, window doors and/or external pedestrian doorsets in a production site. If the manufacturer has several production sites, all production sites that produce for sale/delivery to the Norwegian market shall be included in the control.

Manufacturers of *both* external pedestrian doorsets and windows/window doors may exclude *either* external pedestrian doorsets *or* windows/window doors if, and only if, the external pedestrian doorsets and windows/window doors are manufactured in different factories or production lines. A similar distinction cannot be put between windows and window doors.

3.2.2 Scope of control testing – the 50% rule

At least half (50%) of the openable standard products the member produces intended for delivery to the Norwegian market shall be listed in the certificate and included in the control testing. The scope is verified based on which standard products are intended for the Norwegian market in the control year.

For example, a manufacturer that produces 6 different openable standard products shall hold brand rights for at least 3 of these. See Annex C.

Fixed lights/windows and combination windows shall not be included when assessing the 50% rule.

3.2.3 Extent of annual production volume – the 80% rule

At least 80% of the member's total production volume in number of units delivered to the Norwegian market shall consist of products listed in the certificate. Export of windows from Norway shall be deducted.

The production volume of fixed lights and combination windows is included when assessing the 80% rule. See Annex C.

3.3 The manufacturer's financial situation

3.3.1 Solidity requirements

The manufacturer's financial situation shall be reported to assess the manufacturer's ability to fulfill its future warranty obligations towards its own customers.

The financial situation is judged on the basis of the member's solidity, understood here as the "equity ratio". The equity ratio shall be higher than 0,35.

The equity ratio is the ratio between the member's equity and total balance (total equity and debt) at the end of the last fiscal year.

Alternatively, an equity ratio of 0,2 is acceptable if the manufacturer's liquidity (current ratio) is larger than 1,50.

The current ratio is the ratio between the current assets and short term liabilities/debt.

3.3.2 Requirements for paid membership fees

The membership fee for NDVK is expected to be paid for the current year.

Part 4 The production control

4.1 Purpose

The annual control visit(s) to the member's production site(s) is one part of the running verification of sustained compliance between the member's quality management system, internal factory production control (FPC) and actual construction and production quality against the basis for CE marking of windows and exterior doors according to NS-EN 14351-1 and the basis for membership in NDVK.

4.2 Each member's obligations

According to the Articles of Association, each member is obliged to give inspectors access to all relevant production sites. This means that the member shall berepresented by at least one person during the entire control visit.

Control visits are normally carried out through one day, and is notified to the manufacturer in advance. Often, several control visits are carried out during the same travel. If the inspector has to postpone or change a planned visit on request from the member, additional costs pertaining to the control visit may apply.

The member's contact person during inspection visits shall have:

- access to production areas to follow the inspector around,
- knowledge about the production, and
- Knowledge about the NDVK requirements.

4.3 Execution of control visits

An independent third-party inspector normally carries out the control visit. The visit includes control and verification of compliance between:

- The member's quality management system, actual quality work and requirements for the quality management system and quality work set out in this document (the system audit)

- Requirements for production and production quality set out in NDVK Requirements for doors and windows, this document and the member's own Quality management system (production audit)
- The member's obligations and fulfillment of criteria for approval and marking rights as set out in this document

The latter focuses particularly on follow-up of control testing of products and follow-up of non-conformities found at the previous control visit.

In addition, and based on the company's production process flow chart, any risk areas in the process where errors are more likely to occur and where preventive measures may be necessary are assessed (ISO 9001-2015).

Process descriptions, checklists etc. that are used during inspection visits can be found in the Annexes of this document.

4.4 Categorization of non-conformities

Non-conformities proven during the control visit are categorised as Remarks (A) or Significant non-conformities (B). Assessment criteria for the two categories are described below.

Category	Quality management system	Production
No remark	Satisfies the requirements	Satisfies the requirements
Remark (A)	The manufacturer's written quality assurance routines are deficient and/or written routines are not fully operational	The non-conformity does not have a significant impact on the properties or usability of the finished product and/or the manufacturer's factory production control is partially missing or only partially executed
Significant non-conformity (B)	The manufacturer lacks written quality assurance routines and/or written routines are not operational	The non-conformity has a significant impact on the properties or usability of the finished product and/or the manufacturer's factory production control is missing or not executed

4.5 The system audit

During the system audit, the member's internal quality management system, including the routines for production control, is audited. Requirements for the Quality management system are described in Part 6.

The purpose is to check that there are sufficient written routines for the member's quality management and production processes. The main points are control of the member's systems, descriptions and routines for:

- Instructions for production with tolerance descriptions
- Routines for internal factory production control (FPC)
- Purchase and control of incoming goods and components
- Training and HSE follow-up
- Identification, tracking and labeling of products
- Handling, storage, packaging and delivery of finished products
- Customer complaints and deviation management

The routines in the quality management system form the basis for carrying out production audit as described in the next section.

4.6 Production audit

During the production audit, the manufacturer's operational factory production control (FPC) is audited.

The purpose is to verify compliance between the member's actual production and the routines described in the member's Quality management system. The main points are control of the member's implementation and compliance with:

- Quality control of incoming materials and components
- Tolerance non-conformities in production
- Ongoing quality assurance and routine testing
- Execution of production operations
- Handling, labeling and delivery of finished products
- Control testing, assessment of the 50% and 80% rule

4.7 Approval criteria

The control visit ends with the member being informed verbally of the result of the assessment. Afterwards, and normally within 20 working days, a written inspection report is drawn up and sent to the secretariat with a copy to the member.

The production control is approved if no significant non-conformities or fewer than 5 comments in total are detected during the assessment of the member's Quality management system and production. Five – 5 – or more comments correspond to a significant deviation.

If Significant non-conformities are found, the member is normally given a deadline of 20 working days from the inspection report being sent to implement and document corrective measures to close the non-conformities. A description of the measure and the documentation shall be sent to the inspector for assessment within the deadline.

If the measures taken are not sufficient to close the non-conformities, a new deadline can be set for corrective measures. If the member fail to close the non-conformitites within the extended deadline, the secretariat is notified and will assess the need for extended control.

For Significant non-conformities, the inspection report shall clearly state which audit points that are violated and which deadllines that are set for closure.

If the same control point is judged to have a significant deviation on two subsequent control visits, the member is subject to extended control.

Remarks shall be treated as non-conformities and closed with corrective measures. A written description of the measures taken shall be presented at the next control visit. If the non-conformity is not closed by the next control visit, the Remark is escalated to a Significant non-conformity.

Remarks given at a previous control visit can be assessed as a new Remark if corrective measures are clearly taken, but the documentation of the measures taken are lacking.

Part 5 Control testing of products

5.1 Purpose of control testing

The purpose of periodic control testing is to periodically verify compliance between actually documented performances and performances declared in the declaration of performance for products with brand rights.

Small changes in incoming product flows, production processes, test methods etc. can affect the finished product's performance, and periodic control testing will ensure that declared performance is covered in updated documentation.

The member himself is responsible for control testing taking place in accordance with this chapter.

5.2 Sampling and time for testing

Products listed in the certificate are assigned to be tested either even or odd years. Which standard products that are subject to testing are communicated to members during the first quarter.

Ordinary control testing shall be carried out and preferably reported by the end of the control year.

Upon approval of products, the member can request whether new products should be tested in even or odd years. Distribution is otherwise based on age on previous documentation.

NDVK offers a solution where a notified body in Norway calls for products to be tested according to the sampling schedule. It is voluntary to accept this offer.

5.3 Requirements for test laboratory

Control testing shall becarried out by a notified body listed in the EU's Nando database. This is the same requirement as for type testing ("TT") under AVCP System 3 for construction products.

Members are free to choose any laboratory that meets the above criteria to perform the test.

Test reports shall beprepared in a Scandinavian language or English. If there is an original report in a language other than these, the report shall besubmitted both in the original language and accompanied by an official translation into a Scandinavian language or English.

5.4 Requirements for testing

Testing – test object, installation and test reports – shall comply with the relevant standards for testing and classification.

Test objects shall be produced according to reference sizes given by the product standar EN 14351-1 or in compliance with the guidelines from the laboratory. The validation of the test result for variations in size follows from the product standard and Annex B.

Installation in the laboratory shall comply with relevant test standards and the Minutes of the 12th meeting for sector group SG 06 for notified bodies dated 2011-11-30.

The Minutes of meeting presents an updated figure of the installation and sealing between the test object and the laboratory. The sealant should be placed on the exposed perimeter of the tet object to allow for the outside to inside pressure difference to work through the corner joints. The updated figure is provided in .

The test report shall correctly present the purpose of the testing and how the test itself is performed. The report shall state:

- Whether the test is a type test, control test or repeated control test
- How the test object is installed and tested.

5.5 Approval criteria

Products listed in the certificate shall pass control testing of the performances included in the certificate at least every two years. Performance and acceptance criteria are set out in *NDVK Requirements for doors and windows* .

Products that do not pass ordinary control testing shall be retested as soon as possible (repeated testing). The test report shall state if the test is a repeated testing as described in 5.4.

Approved test results shall be presented to the inspector and the Secretariat no later than the beginning of the calendar year for the next ordinary control test.

Products that fail a second repeated test – that is, fail three tests in a row – lose the approval and is removed from the certificate. Removal from the certificate triggers a review of whether the prerequisites for certification and marking rights according to Part 3 are still present.

Part 6 Requirements for the quality management system

The manufacturer shall have a written Quality management system which sets frameworks and guidelines for the sale, planning, production and delivery of windows and/or external pedestrian doorsets.

The documents shall describe:

- The business itself, roles and responsibilities
- Quality requirements for the business
- Routines for quality management
- Production work and control descriptions

6.1 The business, roles and responsibilities

The Quality management system shall describe the business itself, named roles and responsibilities and the production process/flow.

6.1.1 Scope of the business

The purpose of the business shall at least include an overview of which main products the business produces (windows, doors, classified products, etc.), as well as an explanation of the business' overall quality policy or customer value proposition.

6.1.2 Roles and responsibilities

Description of roles and responsibilities shall at least include the roles and areas of responsibility described in the table below:

Table 1
Overview of which roles and areas of responsibility shall be covered as a minimum

Role	Areas of responsibility to be covered
CEO	• Overall responsibility for the business • HSE responsibility

Quality manager	• QA management and update of Quality management system • Systems for quality and production control • Calibration of equipment • Handling of non-conformities
Technical Manager	• Product documentation • Drawings and material lists • Product development
Factory manager	• Overall responsibility in the factory • Logistics
Production manager	• Production and execution of production control • Training of operators
NDVK contact	• Contact NDVK

One person can have several roles. It is also possible to distribute the areas of responsibility in other ways as long as this is clear from the Quality management system.

6.1.3 Production process/flow

An overview over the production process/flow shall be included. The overview shall include all work and control operations in the production flow, and the order and relationship between the operations. An example is shown in Annex E.

6.2 Quality requirements

Quality requirements for windows and/or external pedestrian doorsets follow from requirements for:

1. Suitability for use according to the Planning and Building Act (pbl.) and Building Technical Regulations (TEK)
2. Documentation and CE marking as set out in the European Construction Products Regulation (CPR) and the Norwegian Byggevareforskriften (DOK)
3. Certification stated in this document and NDVK Requirements for windows and external pedestrian doorsets

4. Other quality level set by the manufacturer himself or the manufacturer's customers

Technical requirements for performance for the finished product set out in bullet point 1–3 are summarized in *NDVK Requirements for doors and windows*. Requirements for production and the factory's production control follow from bullet points 2–4.

The Quality management system shall describe the manufacturer's requirements for production quality and tolerances that apply to the production of windows and/or external pedestrian doorsets. The requirements shall at least include:

- Measuring equipment, calibration and precision
- Quality level and tolerances for marking and use of personal protective equipment, order and cleanliness in production and storage premises
- Quality level and tolerances for input materials and components
- Production quality and tolerances for finished products
- Final inspection before dispatch of the finished product
- Scope of own quality and production control
- Registration and handling of non-conformities

The quality requirements can either be collected in one document and/or included together with work descriptions, one-point lessons or other routines in the Quality management system.

6.3 Quality management routines

The Quality management system shall include written routines for execution of the Quality assurance. Quality assurance includes at least the following:

- Document management, including identification, labeling and version control of documents that are part of the Quality management system, drawings or material lists for products and product documentation
- Periodic review of the company's Quality assurance and system
- Purchasing, assessment of suppliers and control of incoming components
- Training of employees
- Product development and basis for production
- Production and work performance
- Quality control of products
- Marking, documentation and delivery of the finished product
- Registration and processing of non-conformities

6.3.1 Document management

All documents in the Quality management system shall begiven a unique identifier in the form of a document ID (number and/or name) and a version number.

Responsibility for updating the document's content can be assigned to an optional role in the business, but the overall responsibility rests with the quality manager. The quality manager is responsible for control visits.

6.3.2 Periodic review of the quality assurance

The business shall regularly, and at least once a year, carry out a systematic review of the quality assurance and management system. This is often called "management review".

A systematic review means that the business shall follow up and go through its own quality requirements, results from its own quality control, non-conformities and handling of non-conformities.

The review shall berecorded, and a decision/conclusion shall bemade for at least the following points:

- Needs for change in the Quality management system
- Assessment of access to resources
- Possibilities for improvement

6.3.3 Sourcing, assessment of suppliers and control of incoming components

The Quality management system shall include routines for how the business will purchase materials and components for its own production, and control the quality of these at reception. This includes routines for:

- Preparation of specification requirements
- Assessment of suppliers
- Registration of received components
- Execution of reception control

Assessment of suppliers includes a risk assessment of suppliers of critical materials and components with respect to ability to deliver.

A material or component is recognized as critical if a deviation from the planned supply with respect to time of delivery, delivered quality, discontinuity of certifications etc. leads to a similar deviation in the manufacturer's own deliveries.

6.3.4 Manufacturing documents, product development and changes in the production process

Written manufacturing documents shall be provided for all standard products. The manufacturing documents include lists of materials and components, technical drawings and descriptions of the production process for each product.

Technical drawings shall include dimensions, and requirements for technical drawings are presented in Annex F.

The Quality management system shall describe how changes in the product, production process etc. shall be handled to avoid derogation of the quality of the finished product and violation of the prerequisites for approval.

The following definitions are used:

- Product development: Changes in materials, components, design or composition of a product.
- Changes in production process: Changes in machines, control descriptions, flow, order, etc. otherwise in the production process from receival of input components to dispatch of finished products
- Changes in manufacturing documents: Changes in drawings, lists of materials or components, work descriptions and training.

The Quality management system shall have routines for how changes described above are to be handled and implemented in the production infrastructure. The routines shall at least describe:

- Risk assessment of the change's impact on finished quality and the need to change production manuals
- Process for changing manufacturing documents.
- Process for follow-up of changes and control of quality

Normally, changes in the cross-sectional profile (especially rebate or rebate platform), opening hardware/fittings, sealing and/or glazing be critical with respect to the performance of the finished product.

Change in supplier for a component will normally not require new testing of the product as long as the component is of the same kind and of the same material as the same component from the original supplier.

6.3.5 Production and work operations

The Quality management system shall describe how the production process is planned, executed and controlled. Execution and control are described in general terms here, and in detailed terms under "Work and control descriptions".

Planning means necessary measures to ensure production flow in line with the company's own quality requirements.

The following routines shall beincluded in the Quality management system:

- Overview of the company's production flow and sequence of operations
- Overview of special prerequisites or dependencies between operations (drying time, tolerances, quality controls, deviations)
- Overview of responsibilities and roles for all work and control descriptions
- Responsibility for and follow-up of personnel training
- HSE and the need for personal protective equipment for different work operations,
- Making production manuals available for workers

6.3.6 Marking, documentation and delivery of the finished product

The Quality management system shall describe how products are to be marked and labeled at various stages of the production process to ensure traceability throughout production and further into use as a finished product.

The routines shall describe:

- Which technology(s) the company uses for labeling and tracking
- System for identification of orders, products, etc.
- How tracking and labeling are communicated to the customer

6.3.7 Registration and handling of non-conformities

The Quality management system shall describe how non-conformities are to be reported and processed. Any non-conformity from Quality management system routines, work or control descriptions, or established tolerances for production quality is considered as a non-conformity.

The routines shall describe:

- How non-conformities shall be reported and registered
- Who is responsible for handling non-conformities
- Process for handling non-conformities
- Criteria for handling and closure of non-conformities, and
- Verification of corrective measures

6.3.8 Training of workers

The Quality management system shall describe how workers are to be trained to carry out the various work operations. Requirements for training protocols for machines and equipment follow from requirements for the Internal Control System.

The routines shall describe:

- Who is responsible for training
- How individual workers and possibly team shall be trained
- How documentation of training should be registered and stored

6.4 Work and control descriptions

A work or control description shall bedrawn up for each work operation and each control point. As a minimum, work descriptions shall bedrawn up for the work operations and control points described in the manufacturer's production process description according to section 6.1.3.

6.4.1 Work descriptions

Work descriptions shall cover:

- Responsible person/role for the work operation

- Responsible person/role for training operators who will carry out the operation
- Necessary machines or equipment to carry out the work operation
- Description of HSE and the eventual need for personal protective equipment
- The work performance and process itself
- Quality requirements and tolerances at the start and end of the work operation
- Quality requirements and tolerances for order and cleanliness at the workstation

6.4.2 Control descriptions

Control descriptions shall cover:

- Responsible person/role for the control point
- Responsible person/role for controller training
- Necessary equipment to carry out the control
- Quality requirements and tolerances for measurement equipment, the control procedure and results
- Control frequency
- Routine for registration and storage of results and non-conformities.

Requirements for measurement accuracy for certain measurement equipment is presented in Annex G.

Annex A Description of Standard Products

The various standard products are based on NS-EN 12519.

Opening function	Description	Product ID
Toppsving[1] *Top swing*	Outward-opening (reversible) horizontal projecting casement window, "Nordic window".	TS
Sidesving[1] *Side swing*	Opening (reversible) vertical projecting casement window	SS
Side-/topphengslet *Side/ top hung*	Outward-opening side or top hung casement window	SH/TH
Dreie-vippe *Tilt and turn*	Two-way inward opening window, turn-and-tilt/ tilt-and-turn, "European window"	DV
Balkongdør *Balcony/patio door*	Outward opening window door or balcony door	BD
	Inward opening window door or balcony door	IB
Skyvedør *Sliding door*	Lifting/sliding door	HS
	(Tilting)/sliding door	VS
	Sliding door (slide tight)	SD
Ytterdør *External pedestrian doorset*	Outward opening External pedestrian doorset	ED
	Inward opening Exterinal pedestrian doorset	ID
Fastvindu[2] *Fixed lights*	*Fixed lights/(windows)*	*FV*
Kombinasjonsvindu[3] *Mixed windows*	*Window made up of multiple fixed or openable casements within the same frame*	–

[1] The term "swing" is normally only used for reversible windows. Projecting casement windows that are not reversible are often called top *guided* (TG) or side *guided* (SG)

[2] Fixed lights are considered approved if the glazing in the frame is the same as glazing in casements for an openable approved product

[3] Combination windows are classified by the opening function of their openable casements, and granted approval if all fixed and openable casements are approved separately as single casement windows

Annex B Validity of test results

As a starting point, a test result only applies to the product that has actually been tried. The product variety for doors and windows is still so great that testing all combinations is practically impossible. There are also many similarities between products related to opening function, size, frame depth and material use.

Product standard NS-EN 14351-1 specifies validity limits based on size variations within a standard product. These are used as the basis for assessment of documentation of benefits.

Validity of testing for air permeability and rain tightness is described below. For all other properties, reference is made to NS-EN 14351-1 to assess the validity of the test result.

Validity of results based on size variations

For air permeability and rain tightness, the test result for a specific standard product is also valid for standard products of the same type with a smaller or up to 50% larger area than the tested product.

Doors and windows are normally tested in reference sizes. The various reference sizes are reproduced in the table below.

Object	Product type	Dimensions	Reference
V0	Window	1.18 x 1.18 m	SINTEF
V1	Window	1.23 x 1.48 m	EN 14351-1 EN 17213
V2	Window	1,48 x 2,18 m	
D0	Single leaf door	0.88 x 2.09 m	SINTEF
D1	Single leaf door	1.23 x 2.18 m	EN 14351-1 EN 17213
D2	Two-leaf door	2,00 x 2,18 m	
SD	Sliding door	3,00 x 2,18 m	

Based on the opening function and the usual range of variants for sizes, there is an opportunity to jointly test certain opening functions in order to reduce the documentation burden. The prerequisites are presented in the table below.

Product	**Test conditions**	**Largest permitted area for declared unit**	
Windows	When testing with one openable glass panel	V0	2,1 m^2
		V1	2,3 m^2
		V2	4,8 m^2
Windows with two casements	Two standard products can be tried at the same time. The largest permitted size applies per openable panel/leaf, or isolated for an opening function delivered as one window.	V0	1,0 m^2
		V1	1,4 m^2
Balcony doors, window doors and exterior doorsets	Shall be tested alone, and the result applies to product with gaskets/sealing on all sides of the door leaf.	D0	2,8 m^2
		D1	3,6 m^2
Double-leaf doorsets		D2	6,5 m^2
Sliding doors and folding doors	Try alone	SD	9,8 m^2

[1] Where top-turn windows often enter as an openable field in a larger combination window, joint testing with other opening functions can be comprehensive. Normally, top swings are delivered in such large sizes that testing alone is required.

[2] Area measurements apply to each of the frames, i.e. side-hinged *or side-hung* window. Several side-hinged frames can be put together to form a multi-frame window where the total area is limited by the number of frames multiplied by the area limitation.

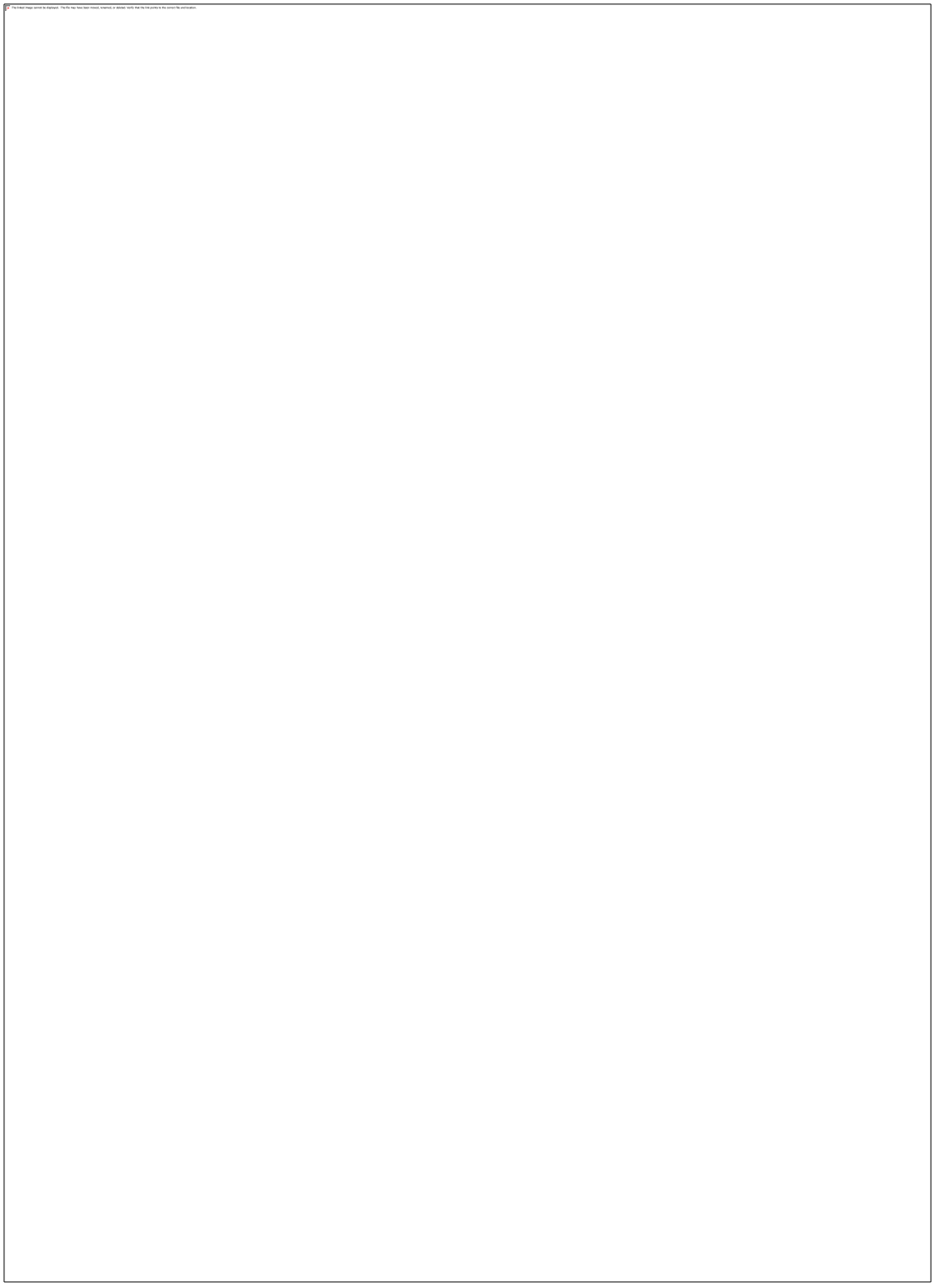
[3] Fixed lights are considered approved if the glazing in the frame is the same as glazing in casements for an openable approved product.

Validity of results based on other conditions

Based on other conditions such as frame depth, glass panels in external pedestrian doorsets and external aluminum cladding, the validity of documentation may also cover other variations, provided that the opening function and sealing solution are the same:

1. Documentation based on the smallest frame depth produced will normally also cover windows with a larger frame depth
2. Documentation for external pedestrian doorsets with glass panels will normally also cover external pedestrian doorsets without glass panels .
3. Documentation for doors and windows with pure wooden frames /frames will normally also cover doors and windows with wooden frames /frames with external aluminum cladding , provided that the aluminum cladding is ventilated and drained.

Annex C Installation of test objects



Annex D Example of verification of compliance with the 50% and 80% rule

Below follows an example of how the 50% and 80% rule should be understood. The table shows the various standard products that a manufacturer produces for the Norwegian market with the associated indication of brand rights and production volume.

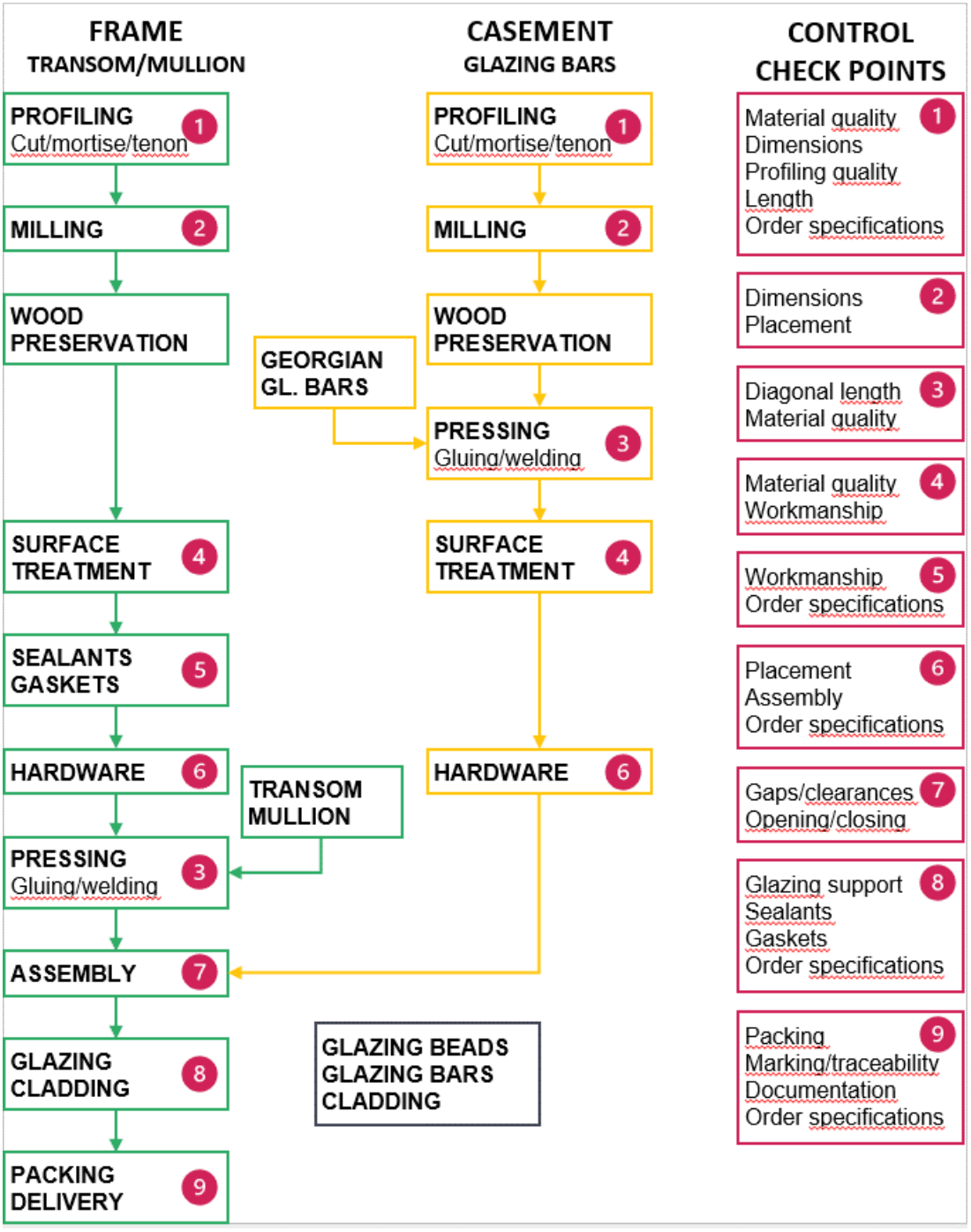
Standard product	Trademark	Production volume	Share
Top swing window	Yes	15511	36.9%
Two-way inward opening window	Yes	4270	10.1%
Balcony door	Yes	4072	9.7%
Top/side hinged window	no	4448	10.5%
Lifting/sliding door	no	1315	3.1%
Fixed frame window	(Yes)	12473	29.6%
SUM		**42343**	**100.0%**

The manufacturer has 6 openable standard products, as well as fixed frame windows. Four standard products have brand rights. Fixed frame windows shall not be included in the assessment of the 50% rule, so the proportion of products with brand rights is 3 out of 5 or 60%.

For the production volume, fixed-frame windows shall be included. If the proportion for each standard product is added up, the total for products covered by Control Testing is 86%.

Annex E Production process example

An example of a production process flow with work operations and control points is shown below.



Annex F Technical drawing requirements

The manufacturer shall have detailed drawings of all products with dimensions and tolerances in accordance with the table below.

- Dimensions shall begiven in millimeters (mm)
- An overall tolerance shall bespecified for the entire drawing
- Non-conformities from the overall tolerance shall bemarked for each individual measure that deviates

Type of drawing	Product type				
	Win-dow	Win-dow door	Tim-ber door	Com-pact door	Bifold products
Horizontal section of both sides with clearance between frame and frame	X	X	X	X	X
Vertical section of top and bottom with clearances between frame and frame	X	X	X	X	X
Horizontal section with clearances between post and frame	X	–	X	X	–
Vertical section with clearances between bulkhead and frame	X	X	X	X	X
Horizontal section of bars in frames	X	X	X	X	X
Vertical section of bars in frames	X	X	X	X	X
Horizontal section of parapets and embankments	–	X	X	–	X
Vertical section of parapets and embankments	–	X	X	–	X
Horizontal section w/clearances - both wings (elements)	–	–	–	–	X

Annex G Accuracy requirements for measuring equipment

The manufacturer shall have measuring equipment with sufficient accuracy to monitor the quality in its own production.

The manufacturer decides which equipment is necessary to maintain the quality requirements for the production and sets forward quality requirements for measuring precision for its own measuring equipment. Quality requirements and routines for how to ensure the necessary quality shall be written.

The table below indicates the minimum measurement precision for some measuring instruments. It is not mandatory to use all the measuring instruments, but where they are used, the precision shall satisfy the values in the table.

Measuring instrument	Measurement range	Measurement precision
Measuring tape	0–1 m	±0.5 mm
	0–2 m	±0.7 mm
	0–3 m	±0.9 mm
	0–5 m	±1.0 mm (EU Class II)
Caliper	0–150 mm	±0.1 mm
Right angle (90°)	Length 500 mm	±0.5 mm
Degree angle	0 –(90°)–(180°)	±0.25 °
Wood moisture meter	7–17% by weight	±1% by weight