



# THE NORDAN COLLECTION

High performance timber and aluminium clad timber windows and doors



WINOR



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- Top: Port Marine development, Bristol



- NorDan's main factory and headquarters in the town of Moi, Norway



- NorDan products offer superior weathertightness



- The new NTech range of windows offers exceptional energy saving

# NorDan

NorDan is recognised across Europe as a leader in timber window and door design and innovation. Its exceptional quality products are used wherever high specification products are required. The new NTech Passive and Low Energy products add to the existing range of standard windows and doors.

Founded in 1926 in Norway, NorDan has a unique reputation for outstanding quality and real value for money. With large state-of-the-art factories able to produce over 2,500 windows and doors per day, a workforce of well over 1,000 and computer controlled production lines, NorDan manufactures in volumes sufficient to supply the largest projects whilst remaining competitive.

The advanced design and construction of NorDan's windows and doors guarantees high performance, low maintenance and durability. All products are manufactured from top quality Nordic pine from well managed sustainable forests. An optional aluminium cladding system, available in a wide variety of colours, protects the timber from ultraviolet radiation, whilst being virtually maintenance free.

As part of NorDan's policy of continuous research and development, work with respected independent scientists in the fields of energy efficiency, lifetime running costs and environmental impact ensures that products are always at the forefront of advanced fenestration technology.

It's not just the products that are environmentally friendly. The bulk of the energy consumed in NorDan's principal factory in Norway is generated from 'zero carbon' hydro electricity and each stage of the manufacturing process is closely monitored to ensure minimal environmental impact.



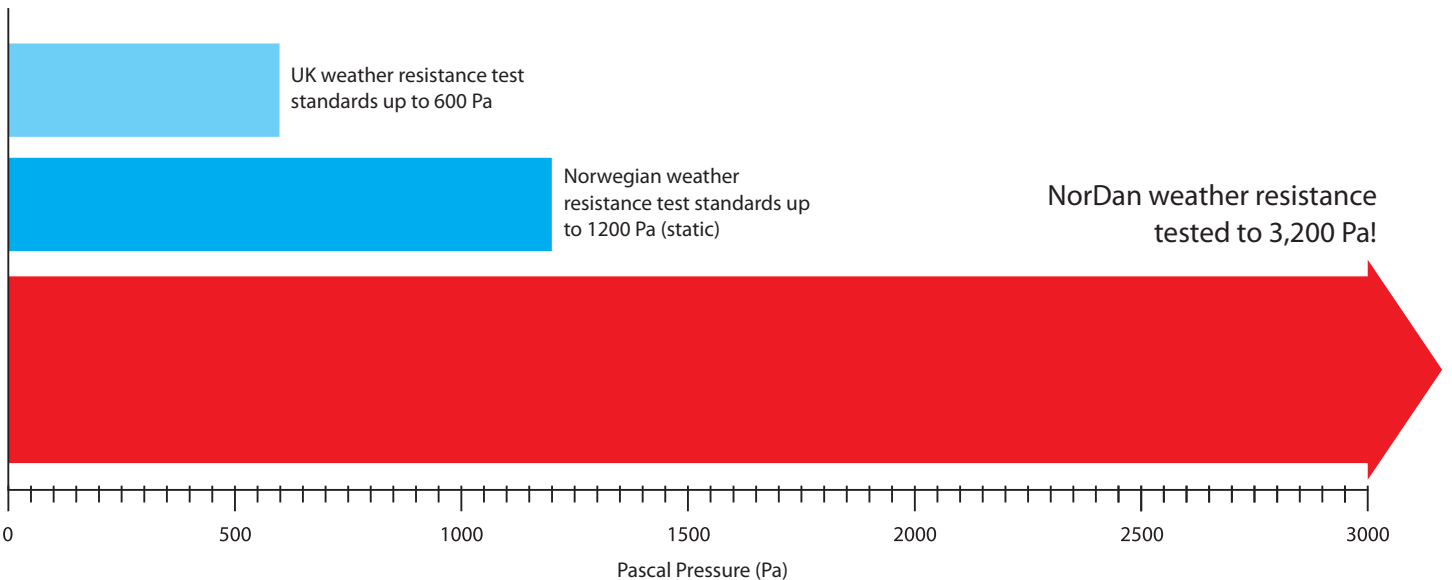
# Weather performance

**M**anufacturing a window to meet the different requirements of various European countries is a daunting challenge. Not only are there different building regulations and recommendations such as British Standards to accommodate, but there are also ever-shifting social demands. Meanwhile, a continuing awareness of environmental issues calls for greater responsibilities on the part of manufacturers.

Where controls and regulations are less stringent, such as in the UK, a window engineered to combat the severest of standards, in the worst of conditions, will perform better and last longer than one built to a lesser standard.

The graph below demonstrates the excellent weather resistance test ratings for NorDan tilt and turn windows. These windows do not leak

at a pressure almost three times the Norwegian test standards. A remarkable achievement, especially for an inward opening tilt and turn window.



# Sustainability

Sustainable development is about ensuring a better quality of life for everyone, not only for the present generation but for generations to come.

Internationally recognised PEFC (the Programme for the Endorsement of Forest Certification) promotes sustainably managed forests through independent third party certification. This scheme has certified and audited NorDan AS windows and doors as achieving full PEFC chain of custody, thus verifying that the timber used in the manufacture of the products comes from sustainably managed sources.

Timber products, sourced from well managed forests, ensure that more trees are planted than are cut down for processing. The younger trees that are planted as replacements are better adapted for reducing atmospheric CO<sub>2</sub> thus further reducing greenhouse gases. In some instances, areas of deciduous trees are planted within conifer forests to encourage a diversity of wildlife.



PEFC/03-31-16  
For more info: [www.pefc.org](http://www.pefc.org)



# High performance NTech

The NTech range of NorDan windows combines the latest cutting edge technology with quality Norwegian craftsmanship.

In response to new Norwegian building standards, NorDan's challenge was to enhance thermal performance of its products to produce a whole window U-value under  $1.2 \text{ W/m}^2\text{K}$  with a product incorporating a sealed double glazed unit. This was achieved with the development of the new NTech range. The NTech Low Energy range offers U-values from  $1.2 \text{ W/m}^2\text{K}$  whilst the NTech Passive range offers a whole window U-value of a staggering  $0.7 \text{ W/m}^2\text{K}$ .

## How did NorDan do it?

Firstly, a robust, highly efficient and environmentally friendly insulation board was developed which could be laminated into pine sections, prior to being machined for product assembly. The components were run through a rigorous testing schedule to ensure that the new sections could perform to NorDan's high standards of weather resistance and security.

## Warm edge technology

Secondly, NorDan combined high performance glazing units with warm edge technology. Warm edge technology is a recent development in sealed multiple glazed units where the aluminium spacer bar filled with a desiccant material has been replaced by a silicone spacer with desiccant included in its composition. The new spacer has the advantage of greatly reducing thermal conductivity around the edge of the glazed units, thus enhancing the performance, and consequently the U-value, of the complete window.

A further improvement in the NTech Passive range was the removal of the trickle ventilator. This ensured that specialist ventilation for passive building standards are not compromised by ventilators inadvertently left open.



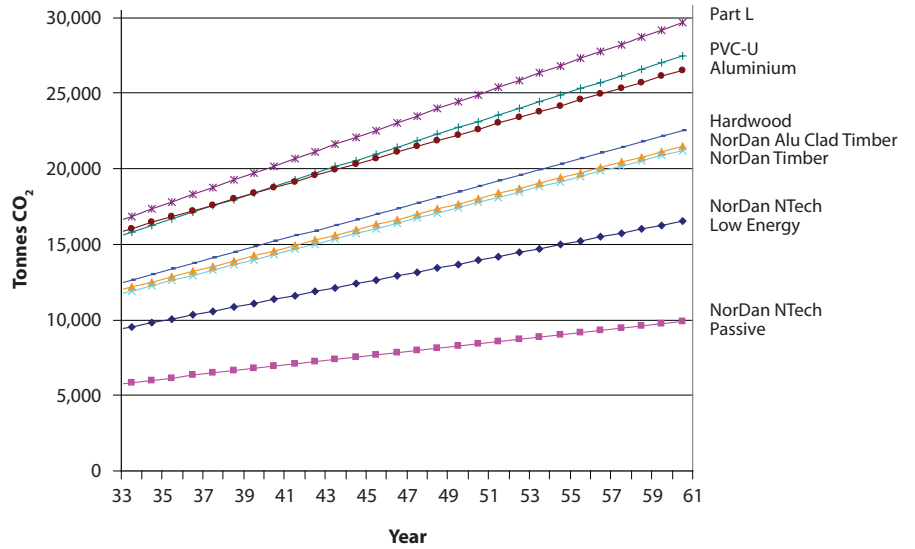
- NTech Passive windows can be used to improve energy saving with NorDan's quality and excellent weather performance as standard

- With NTech, large fixed lights can be produced to bring not only natural warmth from the timber finish but also exceptional insulation

# Lowest carbon footprint

Combining energy used over a product's life-span with the energy used in its production, a whole life analysis can be carried out providing a true overall indicator of energy and carbon use.

NorDan has carried out extensive academic research to evaluate the effects on the environment (in relation to manufacturing processes). Research carried out by Cyril Sweett involved a Whole Life Analysis of NorDan products in comparison to other window types (hardwood, aluminium and PVC-U). The analysis combined the Embodied Energy with the energy 'lost' during usage. A total life time energy graph (see right) was produced for each of the options, which dramatically illustrates the environmental benefits of NorDan NTech products' exceptionally low U-value ratings.



Global Warming Potential - Window Types - Equivalent Tonnes CO<sub>2</sub>



## Independent research

NorDan takes product development seriously and has compiled a brochure containing independent academic research

Issues covered range from the embodied energy of a product, life-cycle assessments and life-cycle comparisons between product types. Among other research, a study from the Whole Life Team at respected construction consultancy Cyril Sweett compares the 'cradle-to-grave' cost of NorDan's NTech windows with standard Part L 2006-compliant windows and reveals the NTech gives an impressive saving of CO<sub>2</sub> emissions over its entire life.

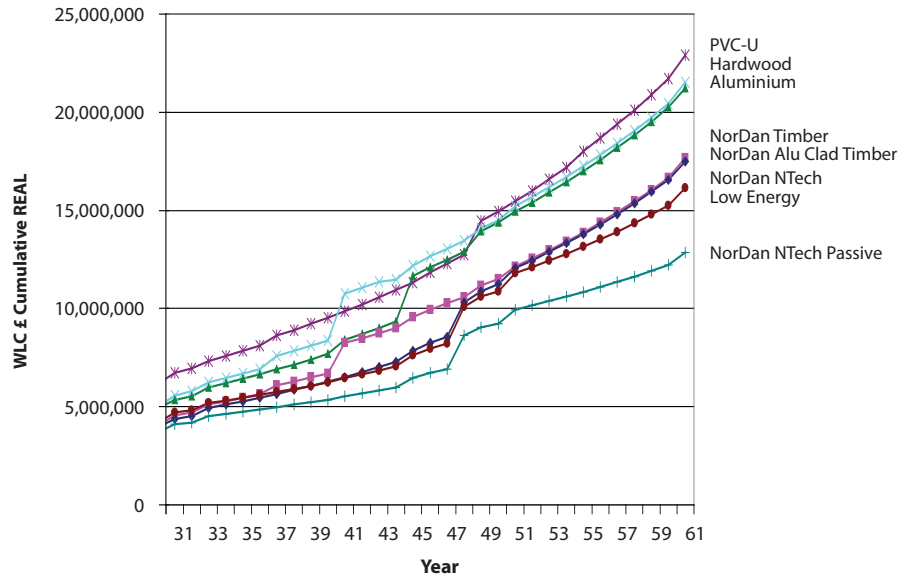
To obtain your copy of NorDan's academic research brochure, simply log onto the NorDan web site.

# Energy saving with NTech

A reduction in U-value of 0.1 W/m<sup>2</sup>K per 1m<sup>2</sup> of window achieves an annual energy saving of 10 kWh. Each 0.1 of a U-value equates to 10 kW/m<sup>2</sup> of glazing per annum, based on an average temperature differential of 6°C (there are regional variations on this, which means that, for instance, this figure can vary on average from 8.1 kW/m<sup>2</sup>K in Aberdeen, 6.6 kW/m<sup>2</sup>K in Dublin to 5.5 kW/m<sup>2</sup>K in London).

An average-sized 3 bedroom house has 20m<sup>2</sup> of external glazing. Therefore, applied to this property, fitting NTech Passive windows instead of the standard 1.8 W/m<sup>2</sup>K windows would result in a saving of 2,200 kWh per annum. With the rapid escalation in energy costs this constitutes a substantial saving, both for the householder and the environment.

The graph, taken from NorDan's Academic Research brochure, includes energy costs inflated at 6.2% pa. This shows the significant long term benefit of the NorDan NTech Passive, compared to other window types.



NorDan Window WLC Study - Whole Life Costs - Maintenance And Energy (Energy with 6.2% Inflation pa)

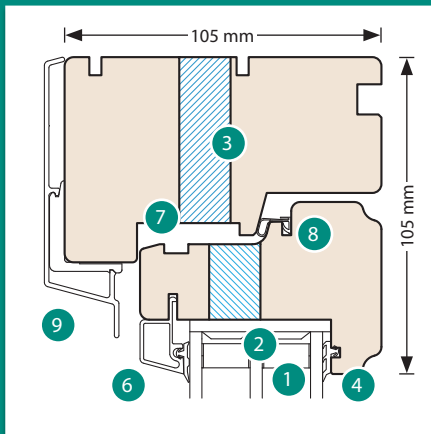


- Stewart Milne Group 'Sigma Home' (Image courtesy of Stewart Milne Group)

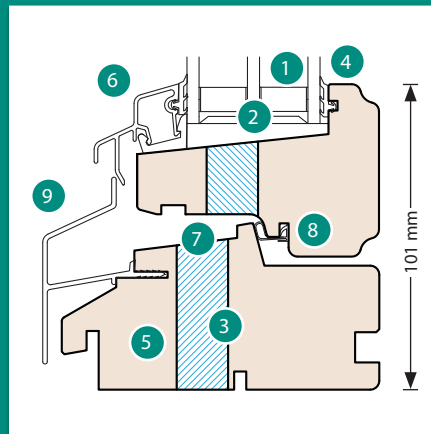


- Kingspan 'Lighthouse' (pictured centre)

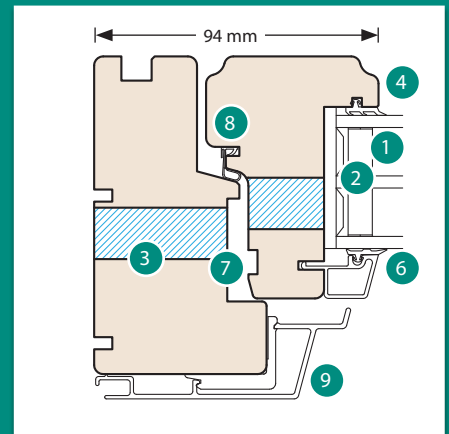




• Head cross section



• Cill cross section



• Jamb cross section

Details show inward opening NTech Passive window range with optional aluminium cladding. For illustrative purposes only.

### Technical drawings

Details of technical drawings are available from the NorDan web site.



## NTech Passive range



- NorDan's NTech Passive window range with triple glazing to greatly improve energy saving performance.



The NTech Passive window range has achieved the coveted Scandinavian Swanmark. This is only awarded to products that meet extremely high environmental standards. The

Swanmark takes into consideration the product's impact on the environment from the raw material to waste, also setting criteria with regard to quality and performance.

### 1 Triple glazed sealed unit

Improved energy saving unit contains low emissivity glass and argon filled cavities: ES 4mm glass - 16mm Argon - 4mm glass - 16mm Argon - ES 4mm glass

### 2 Warm edge technology

Much lower thermal conductivity than traditional aluminium spacers. Consequently the temperature at the edges of the glass is several degrees warmer.

### 3 Insulated frame and sash

A layer of insulation is laminated into all four sides of the 105mm deep frame and sash to greatly enhance energy saving. Timber sourced from sustainable forests, with PEFC full chain of custody. Vacuum impregnation protects the timber from rot, fungal and insect attack.

### 4 Glazing system

The system is self ventilating and self draining, therefore no moisture is in contact with the wood. To improve security, the sealed unit is glued into the sash.

### 5 Groove for extension cill

A variety of aluminium extension cills are available from NorDan to meet your particular design requirements.

### 6 Aluminium glazing beads

Aluminium glazing beads reduce the level of maintenance and create a more substantial design by allowing full ventilation and drainage. The aluminium is securely clipped into place thus preventing any damage to the window.

### 7 Decompression zone

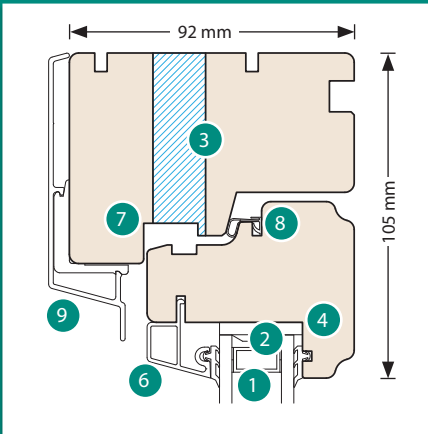
The space between the external surface and the weather seal has been designed as a decompression zone. This neutralises the pressure differentials, and is self draining and self ventilating.

### 8 Gasket

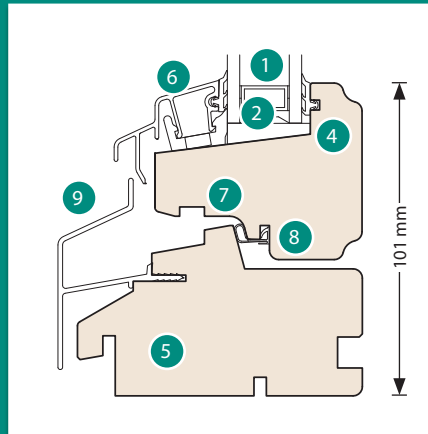
The profile of the window sections and design for drainage depends on the weather seal being able to provide the required resistance of the gap between sash and frame to weather.

### 9 Optional aluminium cladding

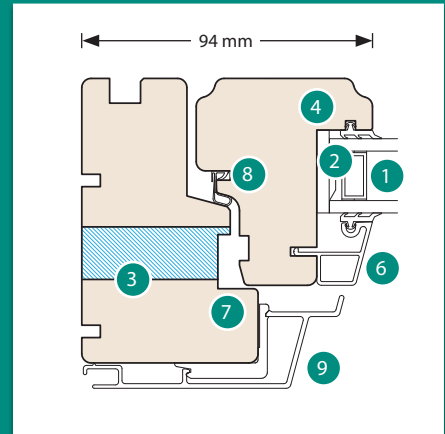
The optional aluminium rain-screen cladding greatly improves the life-span of the product and vastly reduces maintenance costs. It can also be powder coated to any RAL colour of your choice.



• Head cross section



• Cill cross section



• Jamb cross section

Details show inward opening NTech Low Energy range with optional aluminium cladding. For illustrative purposes only.

### Technical drawings

Details of technical drawings are available from the NorDan web site.



## NTech Low Energy range



- NTech Low Energy window range achieving great energy saving with a double glazed unit.

### 1 Double glazed sealed unit

Unit contains low emissivity glass and argon filled cavities, typically: 4mm glass - 16mm Argon - ES 4mm glass

### 2 Warm edge technology

Much lower thermal conductivity than traditional aluminium spacers. Consequently the temperature at the edges of the glass is several degrees warmer.

### 3 Insulated frame and sash

A layer of insulation is laminated into the head and jambs of the 92mm frame to greatly enhance energy saving. Timber sourced from sustainable forests, with PEFC full chain of custody. Vacuum impregnation protects the timber from rot, fungal and insect attack.

### 4 Glazing system

The system is self ventilating and self draining, therefore no moisture is in contact with the wood. To improve security, the sealed unit is glued into the sash.

### 5 Groove for extension cill

A variety of aluminium extension cills are available from NorDan to meet your particular design requirements.

### 6 Aluminium glazing beads

Aluminium glazing beads reduce the level of maintenance and create a more substantial design by allowing full ventilation and drainage. The aluminium is securely clipped into place thus preventing any damage to the window.

### 7 Decompression zone

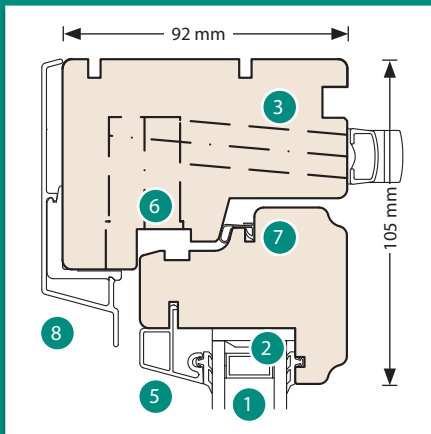
The space between the external surface and the weather seal has been designed as a decompression zone. This neutralises the pressure differentials, and is self draining and self ventilating.

### 8 Gasket

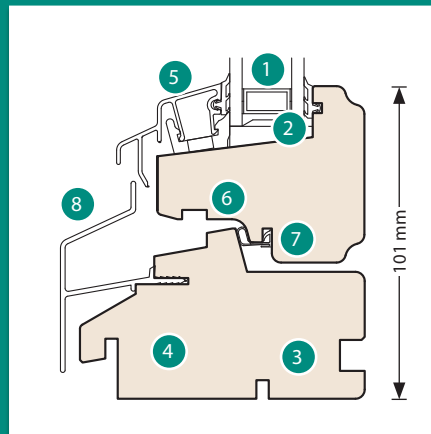
The profile of the window sections and design for drainage depends on the weather seal being able to provide the required resistance of the gap between sash and frame to weather.

### 9 Optional aluminium cladding

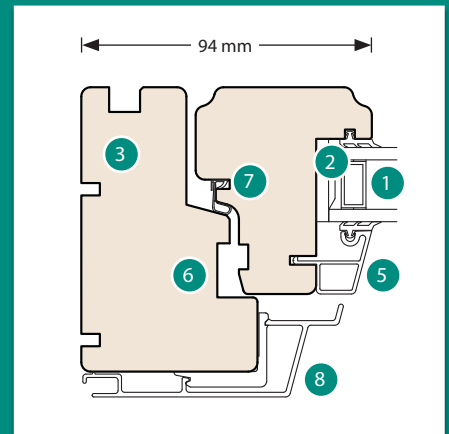
The optional aluminium rain-screen cladding greatly improves the life-span of the product and vastly reduces maintenance costs. It can also be powder coated to any RAL colour of your choice.



• Head cross section



• Cill cross section



• Jamb cross section

Details show inward opening NorDan Standard window range with optional aluminium cladding. For illustrative purposes only.

### Technical drawings

Details of technical drawings are available from the NorDan web site.



## NorDan Standard range



- The NorDan Standard range, available with optional aluminium cladding (shown above) to improve performance and greatly reduce maintenance costs

### 1 Sealed glazing unit

A whole window U-value of 1.4 W/m<sup>2</sup>K is achieved with an Argon filled cavity.

### 2 Glazing system

The system is self ventilating and self draining, therefore no moisture is in contact with the wood. To improve security, the sealed unit is glued into the sash.

### 3 Vacuum impregnated timber

NorDan products use timber sourced from sustainable forests, with PEFC full chain of custody. Vacuum impregnation protects the timber from rot, fungal and insect attack.

### 4 Groove for extension cill

A variety of aluminium extension cills are available from NorDan to meet your particular design requirements.

### 5 Aluminium glazing beads

Aluminium glazing beads reduce the level of maintenance and create a more substantial design by allowing full ventilation and drainage. The aluminium is securely clipped into place thus preventing any damage to the window.

### 6 Decompression zone

The space between the external surface and the weather seal has been designed as a decompression zone. This neutralises the pressure differentials, and is self draining and self ventilating.

### 7 Gasket

The profile of the window sections and design for drainage depends on the weather seal being able to provide the required resistance of the gap between sash and frame to weather.



### 8 Optional aluminium cladding

The optional aluminium rain-screen cladding greatly improves the life-span of the product and vastly reduces maintenance costs. It can also be powder coated to any RAL colour of your choice.



- Top: Millennium School, Greenwich, London
- Left: Winston Way School, Ilford, London
- Above: Adamstown, Dublin

# Window features and options

	Three handled tilt & turn	One handled tilt & turn	Sash & case look-alike	Side hung	Bottom hung	Fully reversible	Villa top swing	Villa side glide	Fixed light	
										
<b>Opening Type</b>	Inward	Inward	Inward	Inward	Inward	Outward	Outward	Outward	Fixed	
<b>Optional Aluminium Cladding</b>	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	
<b>NTech Passive</b>	Yes	Yes	No	Yes	Yes	No	No	No	Yes	<b>NTech</b>
<b>NTech Low Energy</b>	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	<b>NTech</b>
<b>Full PEFC Chain of Custody</b>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
<b>Secured by Design</b>	Yes	No	No	No	No	No	No	No	Yes	
<b>Child Safety</b>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
<b>Safe Cleaning From Inside<sup>(1)</sup></b>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	
<b>Fire Escape<sup>(1)</sup></b>	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	
<b>Fire Resistance Ei30 / B60</b>	Ei30	No	No	Ei30	No	No	No	No	Ei30 / B60	

(1) Depends on size and location

## Optional Aluminium Cladding



Self ventilating and draining, aluminium cladding greatly improves the product's life-span and reduces maintenance costs.

## NTech Availability



The NTech Passive and Low Energy range is available for certain window types.

## Full PEFC Chain of Custody



To ensure that timber comes from a sustainably managed source, NorDan uses timber with full PEFC chain of custody certification in the production.

## Secured by Design



Secured by Design is the UK police initiative supporting the principles of reducing crime by the use of effective design. This has been achieved for a wide range of NorDan products.

## Child Safety



A wide range of restrictors and handles are available for a number of NorDan windows and doors.

## Safe Cleaning from Inside



These windows can be safely cleaned from within your property.

## Fire Escape



Most of NorDan's window range can be produced to a size that will provide an effective emergency escape route in the event of fire. The inward opening window range, especially the three handle and one handle tilt and turn make ideal options.

## Fire Resistance



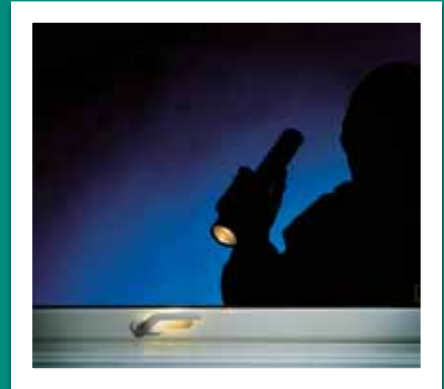
NorDan doors are tested under European requirements. Fire resistant windows are available with different glazing options. NorDan has a variety of fixed and opening windows tested to Ei30 (30 minutes insulation and integrity) with a 60 minute insulation and integrity window (B60) available as a fixed light.



- Simple ventilation using the tilt position



- Corner bolts in the sash, part of the seven secure locking points



- With the three handle tilt and turn security window, peace of mind comes as standard

## Three handled tilt & turn window



- Tilt position for ventilation



- Turn position for cleaning

The NorDan all-in-one window solution is the unrivalled flagship of NorDan that has been in continuous development and production for over 40 years.

- Strong, secure seven point locking system
- Safe cleaning from inside
- Controlled ventilation
- Fire escape (size permitting)
- Wide range of optional extras
- Sash easily removed for fitting

### Operation

For ventilation, the two side handles can be easily opened, allowing the sash to tilt approximately 100mm. For cleaning, the sash opens into the turn position by firstly opening the side handle and then the bottom handle. The sash opens inwards (opening approximately 67° from the frame) to allow easy access to the external glass. The cleaning position can also be used for emergency escape depending on size and location.

### Ironmongery

The seven locking points ensure that the sash is tightly closed against the gasket, making the window both secure and extremely weather-tight.

### Restrictors











A metal restrictor stay is standard and fitted adjacent to the side handle. An alternative high density polymer child restrictor is available to order.

### Trickle vent

The adjustable trickle vent is positioned at the head of the frame to ensure good air circulation within the room. Being independent of the sash, it can operate even when the window is securely closed. NorDan's integral ventilation system means there is no unsightly external vent hood.

### Optional aluminium cladding

Aluminium cladding is optionally available for the three handle tilt and turn window. Powder coating available from the classic RAL colour range. Aluminium cladding increases the life-span of the window and also greatly reduces maintenance costs.

Opening Type	Optional Aluminium Cladding	NTech Passive	NTech Low Energy	Full PEFC Chain of Custody	Secured by Design	Child Safety	Safe Cleaning From Inside <sup>(1)</sup>	Fire escape <sup>(1)</sup>	Fire Resistance Ei30 / B60
Inward	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Ei30
									

(1) Depends on size and location

### Further options

- Pre-fitted secondary sash
- Integral blind systems
- Integrated overlay system
- Mullions and transoms
- Removable handles
- Locking handles
- Additional restrictor stays

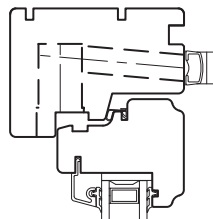
### Size limitations

Min width	388 mm
Max width	2088 mm
Min height	388 mm
Max height	2188 mm
Max width + height	3300 mm
Max sash weight	80 kg

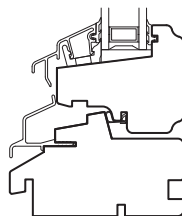
### Technical drawings

A wide range of technical drawings are available from the NorDan web site.

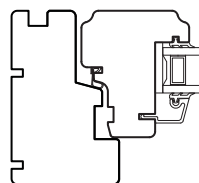
### Standard timber



Head section

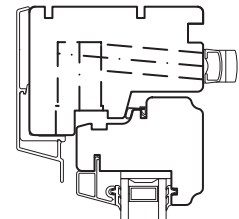


Cill section

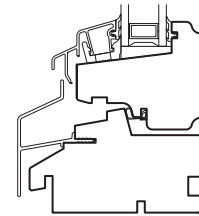


Jamb section

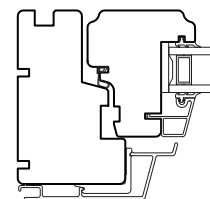
### Optional aluminium clad



Head section



Cill section



Jamb section

Details shown are for illustrative purposes only



- The tilt position allows fresh air to enter the room with minimum disruption



- Simple to use single handle mechanism



- Easy to safely clean the outside of the window from inside your home

## One handled tilt & turn window



- Tilt position for ventilation



- Turn position for cleaning

The one handled tilt & turn window is a variation on the three handled tilt & turn security window.

- Strong secure multi-point locking system
- Safe cleaning from inside
- Controlled ventilation
- Fire escape (size permitting)
- Wide range of optional extras

### Operation

For simple everyday ventilation, the single handle is turned 90° to tilt the sash inwards. For cleaning, the handle is turned 180°. To turn the window inwards to the cleaning position, the handle is moved upwards to 180°. The sash then opens to 90° permitting safe cleaning of the external glass from within the building. In this position, the window also acts as an emergency escape, depending on size and location.

### Ironmongery

The single handle operates gearing which is set into the sash, and is available in satin aluminium or white powder-coated finish. An optional child safety escutcheon device is also available for use with non-locking handles, which holds the sash securely in the tilt position.

### Restrictors

A high density polymer restrictor is fitted as standard to give four options for restricting the opening of the window in the ventilation position.











### Trickle vent

The adjustable trickle vent is positioned at the head of the frame to ensure good air circulation within the room. Being independent of the sash, it can operate even when the window is securely closed. NorDan's integral ventilation system means there is no unsightly external vent hood.

### Optional aluminium cladding

Aluminium cladding is optionally available for the one handled tilt and turn window. Powder coating available from the classic RAL colour range. Aluminium cladding increases the life-span of the window and also greatly reduces maintenance costs.



Opening Type	Optional Aluminium Cladding	NTech Passive	NTech Low Energy	Full PEFC Chain of Custody	Secured by Design	Child Safety	Safe Cleaning From Inside <sup>(1)</sup>	Fire escape <sup>(1)</sup>	Fire Resistance EI30 / B60
Inward	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No
									

(1) Depends on size and location

### Further options

- Pre-fitted secondary sash
- Integral blind systems
- Integrated overlay system
- Mullions and transoms
- Removable handles
- Locking handles
- Additional restrictor stays

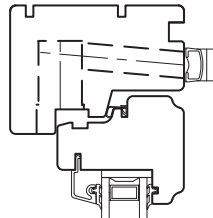
### Size limitations

Min width	488 mm
Max width	1788 mm
Min height	488 mm
Max height	2188 mm
Max width + height	3300 mm
Max sash weight	80 kg

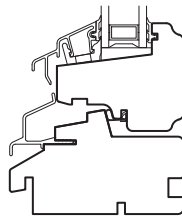
### Technical drawings

A wide range of technical drawings are available from the NorDan web site.

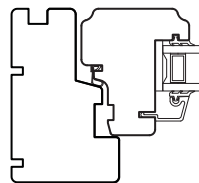
### Standard timber



Head section

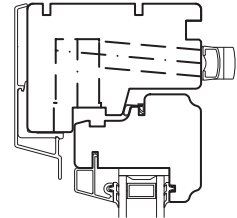


Cill section

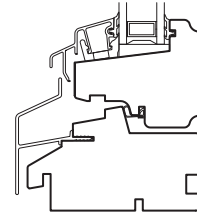


Jamb section

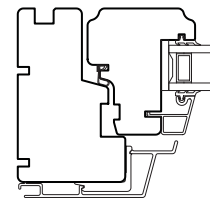
### Optional aluminium clad



Head section



Cill section



Jamb section

Details shown are for illustrative purposes only



- The sash and case look-alike, traditional appearance with exceptional performance



- Corner bolts in the sash, part of the secure seven point locking system



- Meadowcourt, Dublin incorporated sash and case look-alike windows in the project

## Sash and case look-alike window



- Tilt position for ventilation (pictured), turn position for cleaning

The sash and case look-alike window is a variation on the SBD approved three handle tilt & turn security window. When compared to old-fashioned sliding sash and case windows operated by ropes and counterweights, NorDan's alternative sash and case look-alike window provides:

- Higher weather performance
- Strong, secure seven point locking system
- Safe cleaning from inside
- Controlled ventilation
- Fire escape (size permitting)
- Wide range of optional extras

### Operation

For ventilation, the two side handles can be easily opened, allowing the sash to tilt approximately 100mm. For cleaning, the sash opens into the turn position by firstly opening the side handle and then the bottom handle. The sash opens inwards (opening approximately 67° from the frame) to allow easy access to the external glass. The cleaning position can also be used for emergency escape depending on size and location.

### Ironmongery

The seven locking points ensure that the sash is tightly closed against the gasket, making the window both secure and extremely weather-tight.

### Restrictors











A metal restrictor stay is standard and fitted adjacent to the side handle. An alternative high density polymer child restrictor is available to order.

### Trickle vent

The adjustable trickle vent is positioned at the head of the frame to ensure good air circulation within the room. Being independent of the sash, it can operate even when the window is securely closed. NorDan's integral ventilation system means there is no unsightly external vent hood.

### Timber construction

The sash and case look-alike window was developed for conservation areas where traditional timber appearances are maintained. As a consequence, aluminium cladding is not available.

Opening Type	Optional Aluminium Cladding	NTech Passive	NTech Low Energy	Full PEFC Chain of Custody	Secured by Design	Child Safety	Safe Cleaning From Inside <sup>(1)</sup>	Fire escape <sup>(1)</sup>	Fire Resistance E130 / B60
Inward	No	No	No	Yes	No	Yes	Yes	Yes	No
									

(1) Depends on size and location

### Further options

- Removable handles
- Locking handles
- Additional restrictor stays

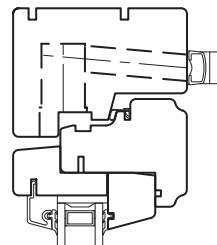
### Size limitations

Min width	388 mm
Max width	2088 mm
Min height	388 mm
Max height	2188 mm
Max width + height	3300 mm
Max sash weight	80 kg

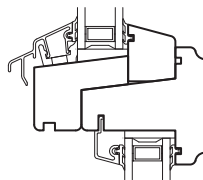
### Technical drawings

A wide range of technical drawings are available from the NorDan web site.

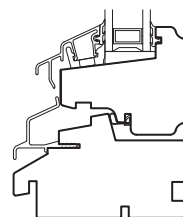
### Standard timber



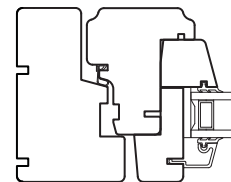
Head section



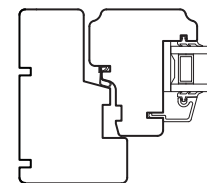
Transom section



Cill section



Upper jamb section



Lower jamb section

Details shown are for illustrative purposes only



- The Fully Reversible window provides up to 180° operation



- Automatic restrictor on hinge



- Safe cleaning of external glass can be carried out from inside your own home

## Fully reversible window



- Ventilation position



- Cleaning position

The fully reversible window opens without encroaching the room space. This ensures there is no interference with curtains or fitsments within a room. Features include:

- Controlled ventilation
- Fire escape (size permitting)
- Wide range of optional extras
- Can be adapted for remote operation

### Operation

For purge ventilation, the handle is turned and the sash is pushed outwards from the bottom until the automatic restriction device locks into place when the window has opened 75-100mm. For cleaning purposes, the restrictor is released and the sash pivoted on the hinge until the restrictor re-engages just before the sash is fully reversed. This enables safe cleaning of the external glass face to be carried out. The restrictor is released to return the sash to its original position where it is securely closed using the handle.

### Ironmongery

NorDan fully reversible windows are fitted with the Spilka Classic hinge which ensures smooth operation and minimum maintenance. In wider sashes, two locking points are supplied to operate the espagnolettes to ensure secure closure.

### Restrictors











All NorDan fully reversible windows have restrictors fitted as standard to one of the hinges. This device engages automatically and is released by pushing it upwards to enable the sash to be reversed for cleaning. There is a secondary locking slot into which the espagnolettes can be locked to provide a very small gap between sash and frame for 'night ventilation'. This does not constitute a secure fixing and use should be made of the trickle ventilator to prevent the risk of break-ins.

### Trickle vent

The adjustable trickle vent is positioned at the head of the frame to ensure good air circulation within the room. Being independent of the sash, it can operate even when the window is securely closed. NorDan's integral ventilation system means there is no unsightly external vent hood.

### Optional aluminium cladding

Aluminium cladding is optionally available for the fully reversible window. Powder coating available from the classic RAL colour range. Aluminium cladding increases the life-span of the window and also greatly reduces maintenance costs.

Opening Type	Optional Aluminium Cladding	NTech Passive	NTech Low Energy	Full PEFC Chain of Custody	Secured by Design	Child Safety	Safe Cleaning From Inside <sup>(1)</sup>	Fire escape <sup>(1)</sup>	Fire Resistance E130 / B60
Outward	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No
									

(1) Depends on size and location

### Further options

- Integrated overlay system
- Mullions and transoms
- Locking handles
- Additional restrictor stays
- Can be adapted for remote control gearing

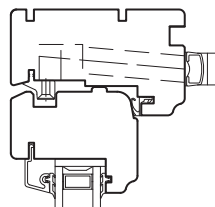
### Size limitations

Min width	388 mm
Max width	2288 mm
Min height	388 mm
Max height	1688 mm
Max width + height	3300 mm
Max sash weight	60 kg

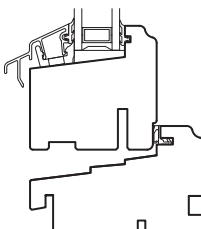
### Technical drawings

A wide range of technical drawings are available from the NorDan web site.

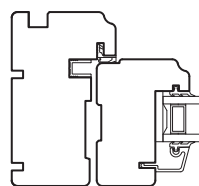
### Standard timber



Head section

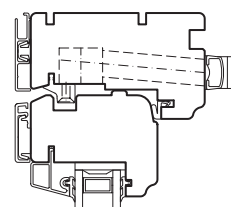


Cill section

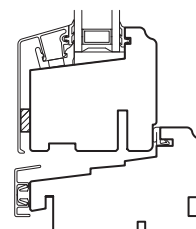


Jamb section

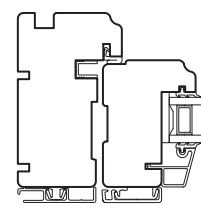
### Optional aluminium clad



Head section



Cill section



Jamb section

Details shown are for illustrative purposes only



- The Villa top swing window provides up to 180° operation



- Automatic restrictor on hinge



- The Villa range offers durable design and construction

## Villa top swing window



The Villa range of windows is specially designed for use when more traditional styled outward opening windows are required.

- Controlled ventilation
- Simple to operate
- Fire escape (size permitting)
- Wide range of options
- Semi-concealed hinges

### Operation

For purge ventilation, the handle is turned and the sash is pushed outwards from the bottom until the automatic restriction device locks into place when the window has opened 75-100mm. For cleaning purposes, the restrictor is released and the sash pivoted on the hinge until the restrictor re-engages just before the sash is fully reversed. This enables safe cleaning of the external glass face to be carried out. The restrictor is released to return the sash to its original position where it is securely closed using the handle.

### Ironmongery

The Villa top swing window has the external hinge mechanism concealed from the outside, giving a neat aesthetic appearance. There is a further option of using the well known Spilka Classic hinge within the window construction.

### Restrictors











The hinge is fitted with an automatic restrictor which limits initial opening of the sash to 100mm and engages again, to fasten the sash securely in the cleaning position. This restrictor is manually overridden to permit full operation of the sash.

### Trickle vent

The adjustable trickle vent is positioned at the head of the frame to ensure good air circulation within the room. Being independent of the sash, it can operate even when the window is securely closed. NorDan's integral ventilation system means there is no unsightly external vent hood.

### Optional aluminium cladding

Aluminium cladding is optionally available for the Villa top swing window. Powder coating available from the classic RAL colour range. Aluminium cladding increases the life-span of the window and also greatly reduces maintenance costs.

Opening Type	Optional Aluminium Cladding	NTech Passive	NTech Low Energy	Full PEFC Chain of Custody	Secured by Design	Child Safety	Safe Cleaning From Inside <sup>(1)</sup>	Fire escape <sup>(1)</sup>	Fire Resistance EI30 / B60
Outward	Yes	No	Yes	Yes	No	Yes	Yes	Yes	No
									

(1) Depends on size and location

### Further options

- Integrated overlay system
- Mullions and transoms
- Locking handles
- Additional restrictor stays

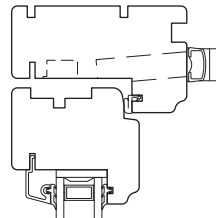
### Size limitations

Min width	388 mm
Max width	2288 mm
Min height	450 mm
Max height	1588 mm
Max width + height	3300mm
Max sash weight	60 kg

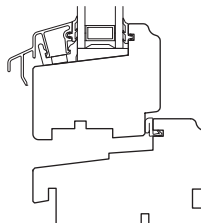
### Technical drawings

A wide range of technical drawings are available from the NorDan web site.

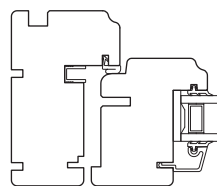
### Standard timber



Head section

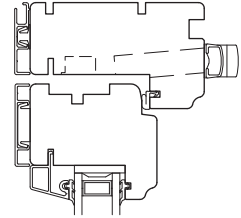


Cill section

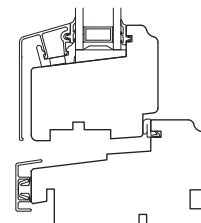


Jamb section

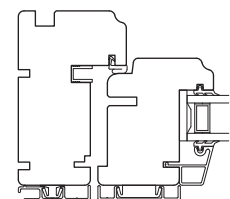
### Optional aluminium clad



Head section



Cill section

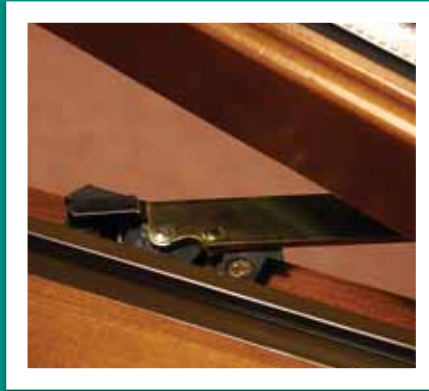


Jamb section

Details shown are for illustrative purposes only



- The Villa side glide offers durable design and construction

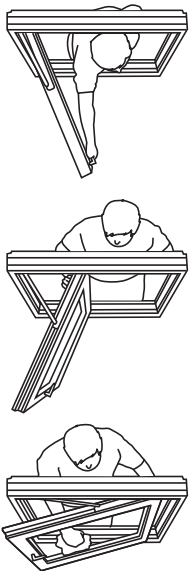


- Accessible safety restrictor under sash



- Optional aluminium cladding greatly reduces maintenance costs

## Villa side glide window



The Villa range of windows is specially designed for use when more traditional styled outward opening windows are required.

- Controlled ventilation
- Fire escape (dependant on size and location)
- Wide range of options
- Concealed mechanism

### Operation

To open the window for purge ventilation, the handle is opened and the sash pushed outwards. A restrictor holds the sash open at approximately 100mm. To open the window for cleaning, the restrictor is released and the sash is reversed until the restrictor re-engages to secure the window in the cleaning position. This window can also act as a fire escape window, dependent on size and location within the building.

### Ironmongery

The window operates on cantilevered stays located in the top and bottom of the sash. It is opened by means of a single handle operating an espagnolette located in the jamb which engages with keepers in the frame.

### Restrictors

There is an automatic restriction device at the cill of the window. Additional safety restrictors can be retro-fitted if required.











### Trickle vent

The adjustable trickle vent is positioned at the head of the frame to ensure good air circulation within the room. Being independent of the sash, it can operate even when the window is securely closed. NorDan's integral ventilation system means there is no unsightly external vent hood.

### Optional aluminium cladding

Aluminium cladding is optionally available for the Villa side glide window. Powder coating available from the classic RAL colour range. Aluminium cladding increases the life-span of the window and also greatly reduces maintenance costs. A high density polymer restrictor is fitted as standard when aluminium cladding is specified as the catch used in the timber window is removed.



Opening Type	Optional Aluminium Cladding	NTech Passive	NTech Low Energy	Full PEFC Chain of Custody	Secured by Design	Child Safety	Safe Cleaning From Inside <sup>(1)</sup>	Fire escape <sup>(1)</sup>	Fire Resistance EI30 / B60
Outward	Yes	No	Yes	Yes	No	Yes	Yes	Yes	No
									

(1) Depends on size and location

### Further options

- Integrated overlay system
- Mullions and transoms
- Locking handles
- Additional restrictor stays

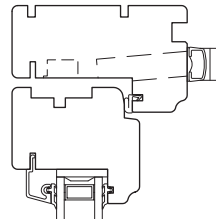
### Size limitations

Min width	388 mm
Max width	988 mm
Min height	388 mm
Max height	2088 mm
Max width + height	2600mm
Max sash weight	50 kg

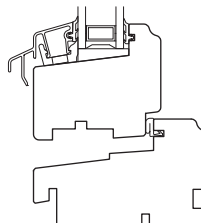
### Technical drawings

A wide range of technical drawings are available from the NorDan web site.

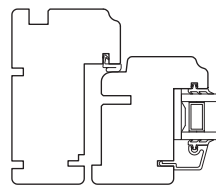
### Standard timber



Head section

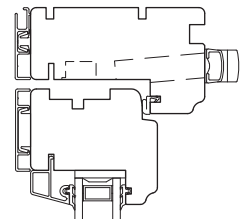


Cill section

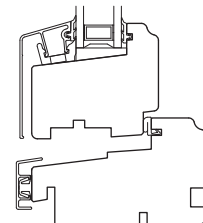


Jamb section

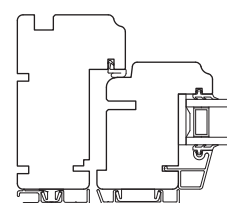
### Optional aluminium clad



Head section



Cill section



Jamb section

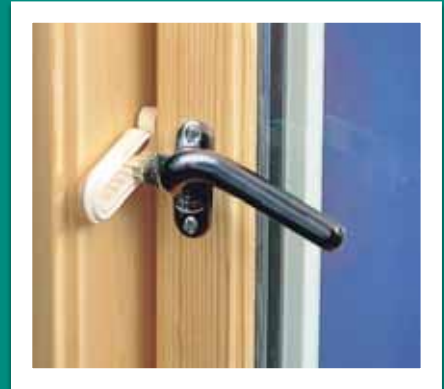
Details shown are for illustrative purposes only



- Multi-sash window with two inward opening sashes



- Combination window with fixed lights and opening sash



- Extra child safety devices are available depending on which type of sash you choose

## Multi-sash and combination window



- Multi-sash (pictured) and combination windows allow more options within one frame

NorDan's multi-sash and combination window range offers a variety of choice within one frame.

### Multi-sash window

NorDan multi-sash windows offer the opportunity to have two or more opening sashes contained within the one frame without the need for on-site coupling, resulting in thinner transoms and mullions. It is not possible to mix inward or outward opening sashes within the one frame.

### Combination window

Offers the benefits of multi-sash windows, with the addition of translucent or opaque fixed lights, all within the one frame. Limiting maximum dimensions as for fixed light.

### Operation

Window operations will depend on which opening window type is used in the configuration.

### Trickle vent

Available as standard on multi-sash windows but optional for combination and fixed lights. The adjustable trickle vent is positioned at the head of the frame to ensure good air circulation within the room. Being independent of the sash, it can operate even when the window is securely closed. NorDan's integral ventilation system means there is no unsightly external vent hood.

### Optional aluminium cladding











Aluminium cladding is optionally available for the combination window. Powder coating available from the classic RAL colour range. Aluminium cladding increases the life-span of the window and also greatly reduces maintenance costs.

### Further options

Options are for individual window types.

### Technical drawings

A wide range of technical drawings are available from the NorDan web site.

Opening Type	Optional Aluminium Cladding	NTech Passive	NTech Low Energy	Full PEFC Chain of Custody	Secured by Design	Child Safety	Safe Cleaning From Inside <sup>(1)</sup>	Fire escape <sup>(1)</sup>	Fire Resistance Ei30 / B60
Fixed	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Ei30 / B60
									

(1) Depends on size and location

## Fixed lights



Fixed lights are available glazed or with insulated panels allowing for inclusion of non-vision panels.

### Mullions and transoms

Mullions and transoms (62mm or 92mm) can be introduced to divide the screen into separate segments for clear or opaque glazing or insulated panels.

### Optional trickle vents

Trickle vents are not available as standard to fixed lights, but are available to order. The detail varies from that of opening windows i.e. the night vent includes a grey plastic hood over the external entrance slot. Where aluminium cladding is applied to the frame, no hood is necessary.

### Optional aluminium cladding

Aluminium cladding is optionally available for fixed lights. Powder coating available from the classic RAL colour range. Aluminium cladding increases the life-span of the window and also greatly reduces maintenance costs.

### Coupling

All NorDan fixed lights can be coupled together or with a combination of opening windows to form larger composite sections.

### Size limitations

Min width	238 mm
Max width	2988 mm
Min height	238 mm
Max height	2988 mm
Max width + height	5000 mm
Max sash weight	180 kg

### Technical drawings

A wide range of technical drawings are available from the NorDan web site.



- Top: Acton High School, London
- Left: St. Marys Credit Union, Navan, Meath
- Above: Bristol Harborside, Bristol



# Door features and options

## Optional Aluminium Cladding



Self ventilating and draining, aluminium cladding greatly improves the product's life-span and reduces maintenance costs.

## Full PEFC Chain of Custody



To ensure that timber comes from a sustainably managed source, NorDan uses timber with full PEFC chain of custody certification in the

manufacturing process. This guarantees that more trees are planted than are used in production.

## Secured by Design



Secured by Design is the UK police initiative supporting the principles of reducing crime by the

use of effective design. This has been achieved for a wide range of NorDan products.

## Fire Resistance



NorDan doors are tested under European requirements. Fire resistant doors are available with different glazing options tested to B30 (30 minutes insulation and integrity).






Single sliding doorsets

Double sliding doorsets

Single security doorsets

Double security doorsets

External doorsets

					
<b>Opening Type</b>	Sliding	Sliding	Inward or Outward	Inward or Outward	Inward or Outward
<b>Optional Aluminium Cladding</b>	Yes	Yes	Yes	Yes	No
<b>Full PEFC Chain of Custody</b>	Yes	Yes	Yes	Yes	No
<b>Secured by Design</b>	No	No	Yes	Yes <sup>(1)</sup>	Yes
<b>Fire Resistance B30</b>	No	No	Yes	No	No



(1) Outward opening only



- NorDan double sliding doors are available



- The secondary lock, improving security and performance



- Alloy anti-lift devices located in the frame head

## Sliding doorsets



The robust yet elegant NorDan sliding door, made from laminated Nordic Pine, has the sliding leaf on the outside. Its design and construction ensures optimum resistance against wind and rain.

A typical sliding doorset comprises of an opening leaf and a fixed leaf of equal size with a meeting rail centrally positioned. NorDan is able to provide doors with unequal leaves and double sliding doors without a central mullion.

### Operation

The opening leaf slides outside the fixed leaf. When the door handle is released the sliding leaf moves off the weather seal and then can be easily moved on its track. The door can be stopped and restrained in any open position on the track by closing the door handle.

### Ironmongery

The sliding door glides smoothly on sealed roller bearings, on a hardened aluminium alloy track.

### Restrictors

There is a secondary locking device on the fixed mullion for use at all times when the door is closed. This secondary lock serves three important purposes:

- Increased resistance against forced entry
- Additional tightening where the fixed and sliding door meet to avoid weather penetration
- Resistance to timber movement






The central lock should be engaged when the door is closed. The sliding door should not be used as a main entrance door.

NorDan sliding doors are also fitted with alloy anti-lift discs located in the frame head, which prevent intruders from lifting the sliding door off its track. For any maintenance or finishing, the anti-lift devices can be removed, but only when the sliding leaf is unlocked and opened.






### Mullions and transoms

Mullions and/or transoms can be incorporated in sliding doorsets to create separate glazing areas. Panels can be used to replace glass.

## Single sliding doorsets

Opening Type	Optional Aluminium Cladding	Full PEFC Chain of Custody	Secured by Design	Fire Resistance B30
Sliding	Yes	Yes	No	No
				

## Double sliding doorsets

Opening Type	Optional Aluminium Cladding	Full PEFC Chain of Custody	Secured by Design	Fire Resistance B30
Sliding	Yes	Yes	No	No
				

### Optional trickle vents

Vents are available to order in a range of colours.

### Optional aluminium cladding

Aluminium cladding is optionally available for sliding doorsets. Powder coating available from the classic RAL colour range. Aluminium cladding increases the life-span of the door and also greatly reduces maintenance costs.

### Further options

Available as a single sliding door or double sliding door.

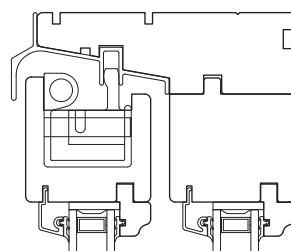
### Single patio size limitations

Min width	1388 mm
Max width	3988 mm
Min height	1588 mm
Max height	2388 mm
Max width + height	6376 mm
Max leaf weight	130 kg

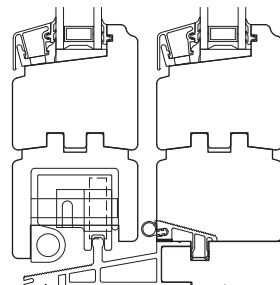
### Technical drawings

A wide range of technical drawings are available from the NorDan web site.

### Single sliding doorset Standard timber

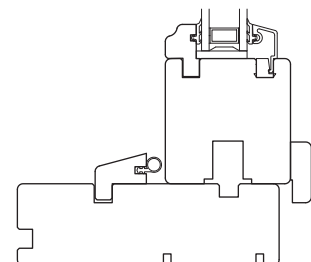
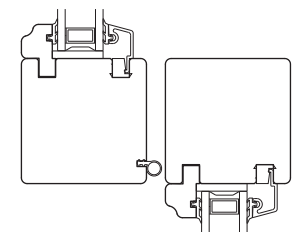
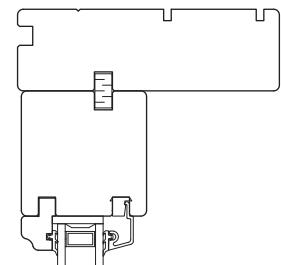


Head



Threshold

Details shown are for illustrative purposes only



Horizontal cross section



- Optional wind-brake restrictor is available for the NorDan security door



- Standard handle with internal thumb turn for exceptional ease of use



- NorDan security door includes a heavy duty locking espagnolette

## Security doorsets



- Doors available either partially glazed (pictured), fully glazed or full panel

The NorDan security door is 'Secured by Design' approved and can be used as a main, balcony or back door. It is available as single or double (French) doors, both inward and outward opening. All models are fitted with three-point locking systems for added security and weather-tightness. Features include:

- Introduction of transoms and/or mullions to suit design requirements
- Insulated panels are built into the frames
- Sturdy security hinges
- Laminated or toughened glass fitted as standard
- A variety of locking arrangements available

### Wide variety

There is a wide variety of design specifications to choose from. Transoms and mullions may be ordered optionally, panels may be aluminium clad externally. The range of glazing options is almost limitless.

### Doorsets

All doors are manufactured and assembled as complete operational doorsets within exterior frame and pre-hung door leaf. Handles and cylinder sets are supplied loose, all other ironmongery is fitted.

### Panelling

Dependent on the finish required, NorDan offer a variety of materials for inset panels. Standard panels are in MDF, with the option of aluminium facing on the outside. Pine veneer panels are optional, and used where a stained finish is specified. Insulated panels are 48mm thick with a U-value of 0.7 W/m<sup>2</sup>K

### Optional aluminium cladding

Aluminium cladding is optionally available for the NorDan balcony door. Powder coating available from the classic RAL colour range. Aluminium cladding increases the life-span of the door and also greatly reduces maintenance costs.

### Optional wind brake device






A friction stay is available as an option on inward and outward opening doors. Doors are profiled to enable retrospective fitting.

### Further options






- Letterplates
- Spyholes
- Kick-plates
- Trickle vents



## Single security doorsets

Opening Type	Optional Aluminium Cladding	Full PEFC Chain of Custody	Secured by Design	Fire Resistance B30
Inward or Outward	Yes	Yes	Yes	Yes
				

## Double security doorsets

Opening Type	Optional Aluminium Cladding	Full PEFC Chain of Custody	Secured by Design	Fire Resistance B30
Inward or Outward	Yes	Yes	Yes <sup>(1)</sup>	No
				

(1) Outward opening only

## Single door size limitations

Min width	588 mm
Max width	1088 mm
Min height	1588 mm
Max height	2388 mm
Max width + height	3476 mm
Max leaf weight	85 kg
(Aluminium clad inward opening Min width 688mm)	

## Double door size limitations

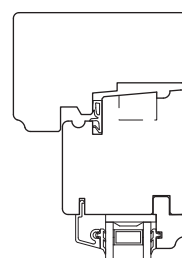
Min width	1088 mm
Max width	1988 mm
Min height	1588 mm
Max height	2388 mm
Max width + height	4376 mm
Max leaf weight	85 kg

## Technical drawings

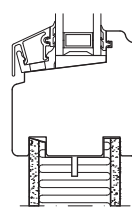
A wide range of technical drawings are available from the NorDan web site.

## Single balcony doorset

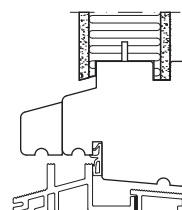
### Standard timber



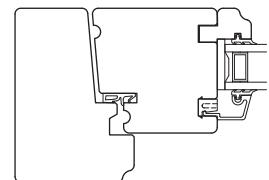
Head



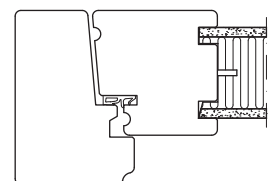
Transom



Threshold



Jamb, glazed section



Jamb, panel section

Details shown are for illustrative purposes only

# External doorsets

NorDan external doorsets use double, rust protected steel plates inside the door, which provide extra security and incredible stability. The advantage of steel is that it is significantly tougher than aluminium, which makes the door difficult to force for any uninvited guests. The steel plates, together with the security lock, striking plate and hinges with side bolts mean that you can feel completely safe.

A further advantage of the NorDan door design is that steel expands less than aluminium with changes in temperature. Unlike aluminium, steel always attempts to return to its natural shape. This means that a NorDan door does not warp or swell in any direction, but keeps its shape year after year, in the face of continually changing climatic conditions.

## External doorset construction

1. Glazed doors have a solid timber frame
2. Triple pane insulated glazing is standard
3. The surface treatment of the door maintains the highest possible quality
4. Double rust protected steel plates
5. Robust, solid timber frame door leaf
6. Heavy-duty HDF board or veneer
7. Segment bonded finger joint frame



## External doorsets brochure

A wide selection of external doorset designs are shown in the brochure, all built with quality and security at the heart of the product.

To obtain your copy of the 'High Performance External Doorsets' brochure, either contact your nearest NorDan office or simply visit NorDan's web site to download a copy.



- Top: Smithton Regional Offices and Workshops, Inverness, Scotland
- Right: Admiral House, Newport Rd, Cardiff, Wales
- Above: Mellows Quay, Dublin

# Glazing options



- Glazing system is securely fixed

NorDan have their own in-house insulated glass manufacturing facility and also have partnering arrangements with some of the largest manufacturers in Europe and worldwide specialist suppliers.

## Security and safety glass

NorDan's security glazing system involves the sealed units being adhered to the sash/frame in such a way that it cannot be removed from the outside. For added security, a variety of glazing combinations are available to suit most situations from burglary to blast protection. Laminated and toughened glass is provided by NorDan to improve safety and security. Laminated glass is heavier than toughened glass and easier to obtain as it is commonly available from stock, whereas toughened glass requires ordering in advance.

## Energy saving

NorDan offers a wide range of window and glazing combinations offering whole-window

U-values from a standard  $1.6 \text{ W/m}^2\text{K}$  down to a  $0.7 \text{ W/m}^2\text{K}$ . The latter is achieved using the NTech Passive window, which has a BFRC rating of A+4.

## Light & heat

Due to the low U-values offered in NorDan products, window areas can be increased thus contributing to light and airy buildings. A large selection of glazing combinations offers increased thermal insulation and/or solar reflection to suit individual building design requirements.

## Sound reduction

NorDan glazed products offer resistance to the transmission of most common noises within a double-glazed window. For more complex and onerous acoustic situations, a double window combination is available.



- Barge Arm, Gloucester Docks



- University of the West of England, Bristol

Glass type	Glass description	U-value (W/m <sup>2</sup> K)			Sound reduction Rw + Ctr (dBA)	Glazing Configuration	Thickness (mm)	Weight kg/m <sup>2</sup>	Sun Factor (SF) (%)	Transmittance (LT)%	External Light Reflex (LR)%
		Glass	Window	Balcony Door							
Ref. Glass	Float glass	2.7	2.7	1.9	28	4-16-4	24	20	76	82	15
		2.7	2.7	1.9	32	4-16-6	26	25	75	81	15
		2.8	2.8	1.9	27	6-12-6	24	30	72	80	14
		1.9	2.0	1.6	27	4-12-4-12-4	36	30	68	74	20
Energy Glass	Energy clear	1.4	1.7 <sup>(1)</sup>	1.4	28	4-16-ES4	24	20	64	79	13
		1.1	1.4 <sup>(2)</sup>	1.4	28	4-16G-ES4	24	20	64	79	13
		1.4	1.7 <sup>(1)</sup>	1.4	32	6-16-ES4	26	25	63	78	13
		1.1	1.4 <sup>(2)</sup>	1.4	32	6-16G-ES4	26	25	63	78	13
		1.6	1.8 <sup>(2)</sup>	1.5	27	6-12-ES6	24	30	62	77	13
		1.3	1.6 <sup>(2)</sup>	1.4	27	6-12G-ES6	24	30	62	77	13
		1.2	1.5 <sup>(2)</sup>	1.4	27	4-12-4-12-ES4	36	30	53	68	19
		1.0	1.3 <sup>(2)</sup>	1.3	37	4-12-4-12G-ES4	36	30	52	68	19
Light and Heat Reg	Coated glass	1.4	1.7 <sup>(1)</sup>	1.4	32	6-16-4	26	25	32	62	15
		1.1	1.4 <sup>(2)</sup>	1.4	32	6-16G-4	26	25	32	62	15
		1.6	1.8 <sup>(2)</sup>	1.5	27	6-12-6	24	30	32	61	15
		1.2	1.5 <sup>(2)</sup>	1.4	27	6-12G-6	24	30	32	61	15
Sound Reduction	Noisemod. isolate	2.7	2.7	1.9	32 <sup>(3)</sup>	6-16-4	26	25	73	81	14
	Noisemod. energy	1.4	1.7 <sup>(1)</sup>	1.4	32 <sup>(3)</sup>	6-16-ES4	26	25	56	74	14
	Noisemod. E with argon	1.1	1.4 <sup>(2)</sup>	1.4	32 <sup>(3)</sup>	6-16G-ES4	26	25	56	74	14
	Noisemod. Energy	1.3	1.5 <sup>(2)</sup>	1.4	33 <sup>(5)</sup>	6-10-4-12-ES4	36	35	50	67	19
	Noisemod. E with argon	1.1	1.4 <sup>(2)</sup>	1.3	33 <sup>(5)</sup>	6-10-4-12G-ES4	36	35	50	67	19
	Noisestop	1.4	1.7 <sup>(1)</sup>	1.4	38	8ES-20-4/0.38/4	36.4	41	55	76	11
	Noisestop	1.1	1.4 <sup>(2)</sup>	1.4	38	8ES-20G-4/0.38/4	36.4	41	55	76	11
Safety	Laminated F1	2.7	2.7	1.9		6.38-16-4	26.4	26	72	81	14
		1.4	1.7 <sup>(1)</sup>	1.4		6.38-16-ES4	26.4	26	56	74	14
		1.1	1.4 <sup>(2)</sup>	1.4		6.38-16G-ES4	26.4	26	56	74	14
		2.8	2.8	1.9		6.38-12-6.38	26.8	32	71	80	14
		1.3	1.5 <sup>(2)</sup>	1.4		6.38-12G-ES6.38	26.8	32	62	77	13
		2.7	2.7	1.9		4-16-6.38	26.4	26	75	81	15
		1.4	1.7 <sup>(1)</sup>	1.4		4ES-16-6.38	26.4	26	53	74	15
		1.1	1.4 <sup>(2)</sup>	1.4		4ES-16G-6.38	26.4	26	53	74	15
	Laminated 'Matt'	1.4	1.7 <sup>(1)</sup>	1.4		4ES-16-6.38M	26.4	26			
Ornamental	Cotswold / Stippolyte / Matt	2.7	2.7	1.9	28	4-16-4	24	20			
	Cotswold / Stippolyte / Matt + Energy clear	1.4	1.7	1.4	28	4-16-ES4	24	20			

NorDan offer a large variety of glazing combinations for different situations, please consult your local NorDan office for further information

U-value on glass and glass specifications are stated from the suppliers. U-values (on fixed light 1230mm x 1480mm, balcony door 988mm x 2188mm with 1001mm panel height) are calculated in accordance with EN ISO 10077-1&2 and the computer programme Therm. Some are measured in 'Hot Box'. Centre U-value for glass according to NS EN 673.

**U-values on opening windows are different from fixed light**

- (1) Inward opening windows are 0.1W/m<sup>2</sup>K lower than the values shown.
- (2) Outward opening windows are 0.1W/m<sup>2</sup>K higher than the values shown

**Sound reductions that are stated are measured in fixed light 1188mm x 1188mm**

- (3) Measured sound reductions: Opening window = Rw + Ctr 33 dBA
- (4) Measured sound reductions: Opening window = Rw + Ctr 38 dBA (w/double gasket)
- (5) Measured sound reductions: Outward opening window = Rw + Ctr 34 dBA with double gasket in top = Rw + Ctr 35 dBA

Balcony door (988mm x 2188mm):  
With anti-sound panel: Rw + Ctr 37 dBA

**Rw + Ctr** = Ra (traffic noise reduction)



- One of the robotic arms used for pre-finishing



- Pre-finished windows on the way to assembly



- NorDan's aluminium cladding is securely attached to the frame and sash

## Optional aluminium cladding

NorDan products can be produced aluminium clad. This includes sliding doors, double doors, single doors and all windows, either opening or fixed (apart from the sash and case look-alike window).

NorDan recommend aluminium cladding of windows and doors for all situations because of the distinct advantages it offers:

- Virtually zero maintenance
- Self ventilating and draining
- Proven design
- Easily replaced
- Huge range of colours
- Stays attractive

### Effective against extreme weather

Because aluminium cladding is an effective rain screen barrier, fully equipped to self drain and ventilate, the solution is particularly suitable for coastal areas or where the weather or pollution is most demanding.

### Wide choice of colours

Powder coating is available from a selected range of colours from the 210 available within the RAL Classic range.

## Finishing options

NorDan has many years' experience applying factory pre-finishes to windows and doors. There have been great changes in paint products during this time. Some of the decisive factors being increasing environmental considerations and continual improvement on behalf of paint producers.

The factory finishing department is constantly controlled to ensure good air circulation and relative humidity to allow gradual water evaporation. This keeps drying times to a minimum and quality to a maximum.

### Dual colours

Dual colours are available, however NorDan suggest you order the goods in one colour and apply a second colour after installation. Alternatively, take advantage of optional aluminium cladding which can be coloured separately to the internal timber finishing.

### Highly recommended

NorDan recommend the use of pigmented, opaque finishes to provide the longest lasting finish.



- The secondary sash can be easily opened from inside for internal opening windows



- Integral Venetian blinds within the secondary sash



- Transoms and mullions are available to suit your project

## Secondary sash and venetian blinds

### Better energy saving

A window with a secondary sash benefits from lower U-values. The internal sealed unit is protected by the outer sash, which effectively removes any wind chill factor from the internal sealed unit. Sound reduction is also improved by use of a secondary sash.

Vandalism can be successfully dealt with by glazing the outer secondary sash with optional laminated glass or vandal resistant plastics.

### Simple cleaning

Cleaning the secondary sash couldn't be easier should the need arise. First, open the window into the cleaning position, then open the concealed catches to swing the secondary sash open.

### Integral venetian blinds

With the venetian blind placed between the secondary sash and the sealed unit, the outer glass protects it from the weather and reduces blind cleaning to an absolute minimum.



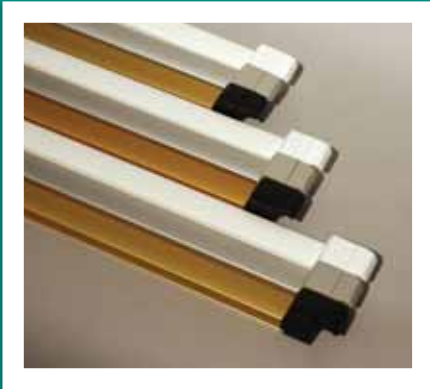
## Transoms and mullions

The design potential for any architectural project can be increased considerably by incorporating transoms and mullions into any NorDan product. A transom or mullion constructed within a NorDan sash provides separate sealed units either side. Alternatively, glass areas can be broken up with overlays.

The NorDan standard range of products can have transoms and mullions in 62mm or 92mm widths. The exception to this is the Villa range which offers only 62mm width.

### Glazing bars

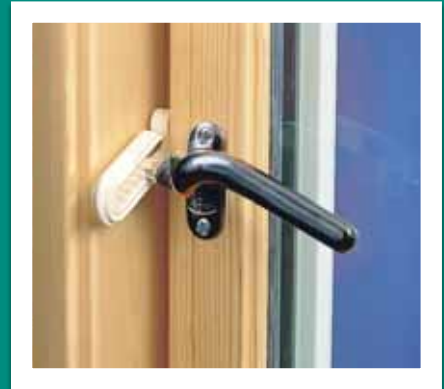
NorDan can also provide a multi-paned solution using a duplex "astragal" system to effectively produce the appearance of individual panes of glass both internally and externally.



- Vents and colours



- Insect screen



- Extra child safety device

## Further options



### Overlays

Overlays are a small section of timber frame divided into panes to produce square or rectangular patterns over the main window or door leaf glazing. Overlays are fitted over the glazing beads by way of hinges with removable pins. This method of fixing enables the overlay to be released for cleaning purposes. The overlay moves with the window sash or door leaf.

The overlay can be designed to suit your particular needs or taste and, once attached, will afford your home with a totally new appearance. Overlays are available in a range of different sections, and to exhaustive design configurations.



### Handles

Available as polished chrome, polished brass effect and white.

### Locking handles

Available as polished chrome, polished brass effect and white.

### Removable handles

Instead of a fixed handle, choose a removable handle to enhance safety or security requirements.

### Cleaning lock

To hold your tilt and turn window in the cleaning position, an optional restrictor is available.

### Insect screen

The insect screen is attached to the exterior side of inward opening windows.

### Extra child safety device

This high density restrictor is a quality investment in improved child safety. Its ease of use extends opening possibilities.

### Internal ventilators with style

Internal trickle vent control bars are available satin anodised as standard, with white as standard for white windows. Brown or gold anodised are available on request.

### Extruded aluminium cills

Extended sub cills are fitted under windows to shed rain from the window and wall. The way to produce high performance windows that will last the longest with the least maintenance is to ensure that the weakest part of any window, the bottom, gets special attention. Cills are available to order in a wide range of colours from the standard RAL colour range.





- Top: Lotte Glob House, Sutherland
- Right: Greenford High School, London
- Above: The Coombe, Dublin

# 10 Year warranty

The following warranties are offered as standard on all NorDan windows, security doors and sliding doors as featured in this brochure.

- 10 years against glass unit failure (hermetic failure) on factory fitted glazing
- 10 years against manufacturing defects
- 10 years against ironmongery failure
- 5 years parts and labour & additional 5 years parts only

The warranty does apply if the product is installed and maintained as stated in the instructions supplied on delivery and can also be downloaded from the NorDan web site.

For warranty exclusions and full terms and conditions, please refer to the 10 year product warranty, available on request.

A full range of spares are stocked in the British Isles. For after sales service, please contact your local NorDan supplier.

## British board of agrément

The BBA's Agrément Certificates have been providing authoritative and independent information on the performance of building products for over 40 years. Every Agrément Certificate contains important data on durability, installation and compliance with Building Regulations, in England, Wales, Scotland and Northern Ireland.



• Ronaldson's Wharf, Leith, Edinburgh



• Bearsden Baptist Church, Glasgow

# Need to know more?

If you need any further information for NorDan high performance windows and doors, please contact your local office (details on the back of the brochure) or visit the web site:

[www.nordan.co.uk](http://www.nordan.co.uk)



The web site offers full product technical drawings along with further literature. There is also a facility to book RIBA accredited CPDs for architects and download the latest NBS specifications.

## Specialist contractors

NorDan UK offer a complete design, supply and installation service for full project management from an initial enquiry through to the final handover, ISO registered to Quality Assurance (BS EN ISO 9001: 2000) and Environmental Management (BS EN ISO 14001: 1996).

## Stock range

NorDan UK offer a stock range of products, perfectly suited for domestic projects and trade customers that require fast, efficient delivery. The stock range doesn't just cover external joinery but also a wide selection of internal doors and doorsets from leading European manufacturers. The stock range brochure is available from the web site.



• Winston Way Primary School, Ilford, London



• Victoria Wharf, Cardiff



For further information, please contact your nearest NorDan UK office:

ABERDEEN  
NorDan UK Ltd  
Norse House  
Greenwell Road  
East Tullos  
Aberdeen  
AB12 3AX

WISHAW  
NorDan UK Ltd  
96 Kirk Road  
Wishaw  
North Lanarkshire  
ML2 7NS

GLOUCESTER  
NorDan UK Ltd  
Green Farm Business Pk  
Falcon Close  
Quedgeley  
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