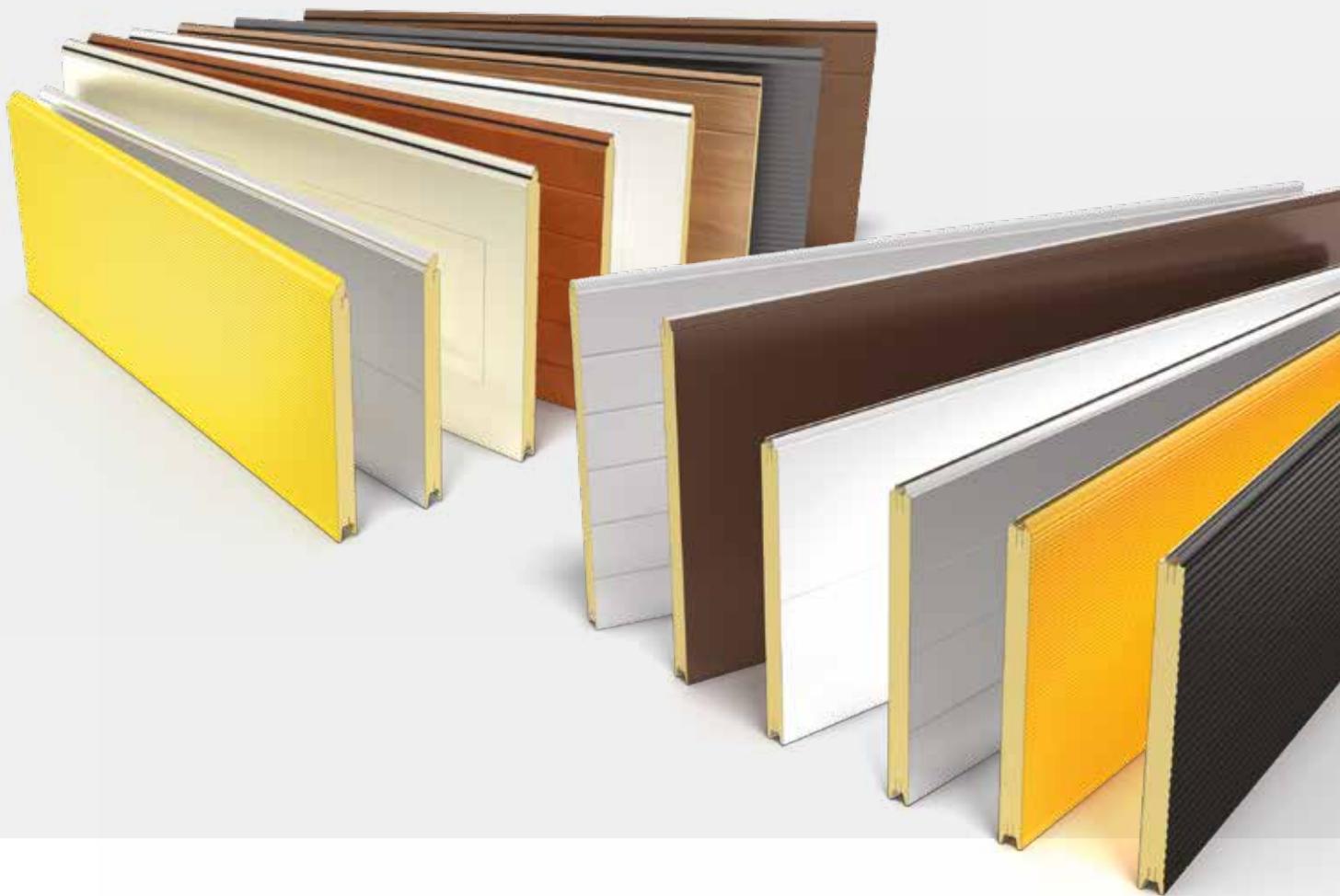


Insulated Sectional Door Systems
Global

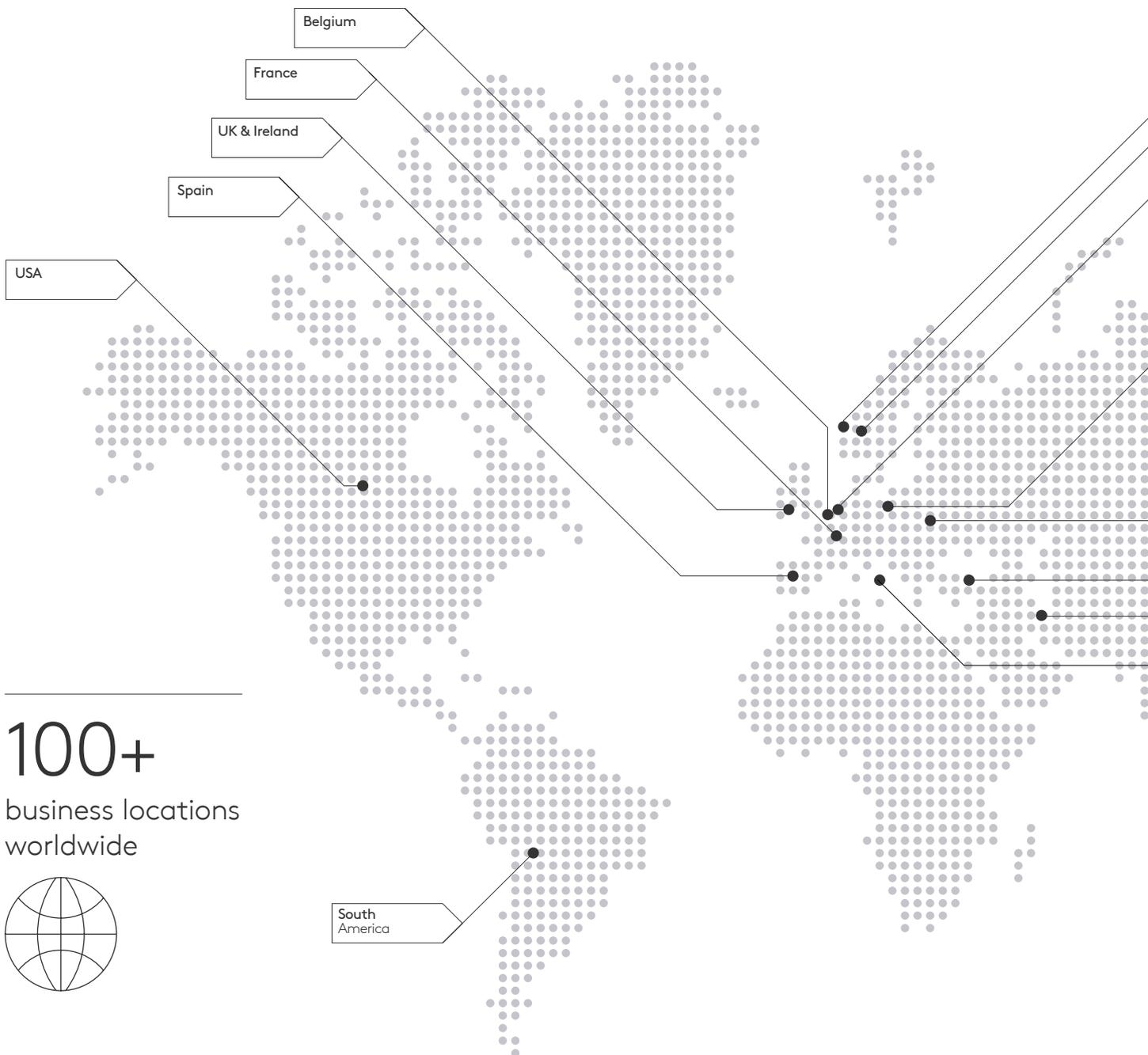
Insulated Sectional Door Systems Technical Brochure

Industrial & Residential Insulated Sectional Door Systems

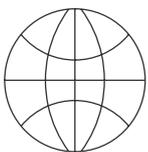


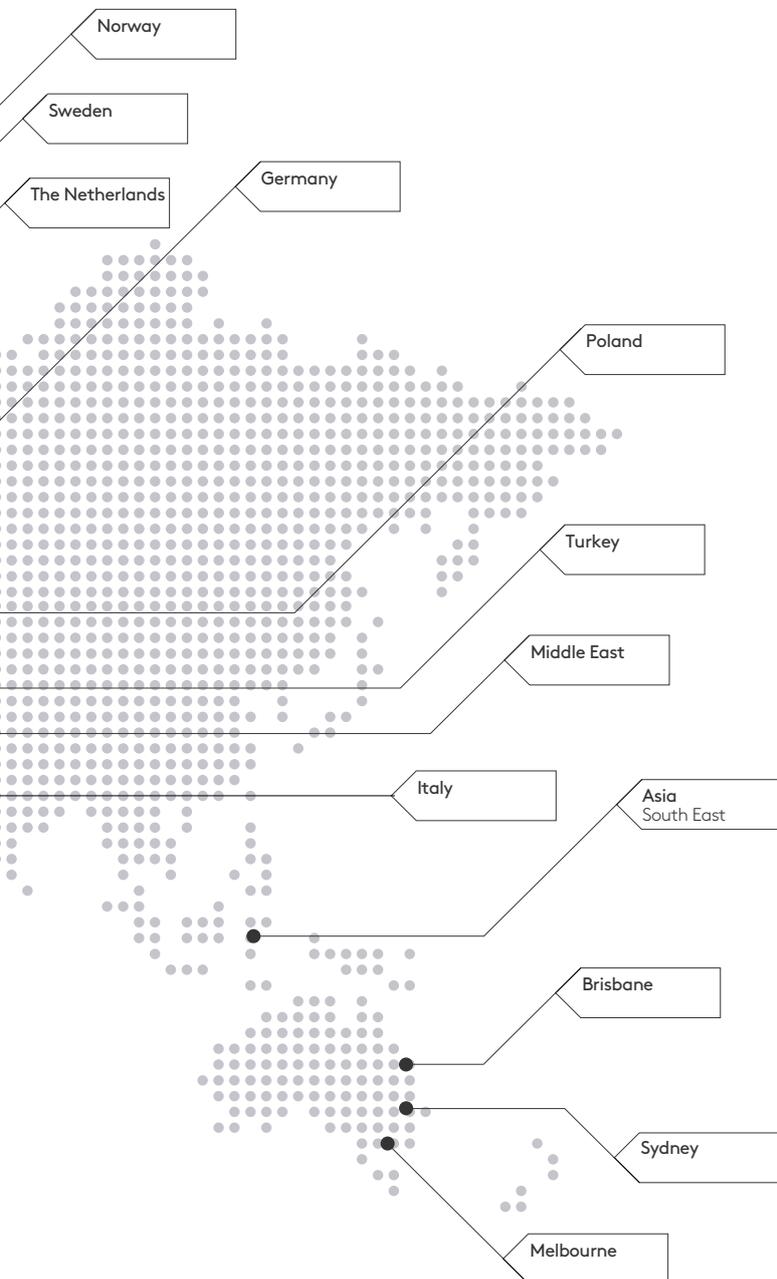
Your Global Partner

Kingspan is a global leader in high performance insulation, building fabric, and solar integrated building envelopes. We deliver high efficient and low carbon building solutions across a broad range of market sectors.



100+
business locations
worldwide





Our market-leading businesses epitomise the Group’s philosophy of customer-led, value-added solutions.

Founded in the late 1960s, the Group has grown steadily to become a prominent brand within the construction industry.

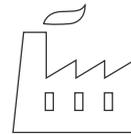
Today the Group has manufacturing plants around the globe, sells in more than 85 countries and employs more than 14,000 people worldwide.

In 2012 the Kingspan Group acquired ThyssenKrupp Construction Group, the European leader in insulated panels. Hoesch Door Elements was part of this acquisition, and as of 2016, is part of the Kingspan Door Components division.

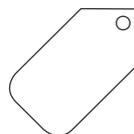
20
technical design
centers



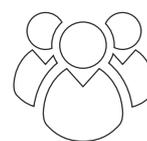
129
manufacturing
sites worldwide



4.4
€ billion turnover
in 2018



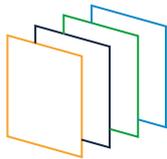
14,000+
employees
worldwide



Why Choose our Door Elements?



Short Lead
Times



Large Product Range



Excellent Technical
Service



Superb Customer
Service



Wide Choice
of Colours

Together, Insulated Sectional Door Systems and Hoesch Door Elements provide a unique range of door panels. With the industry leading manufacturing team, world class customer service and technical teams, you are safe in our hands.

FIREsafe

It achieves market-leading fire performance against a range of international standards, meeting the most stringent of building regulations and is approved by international insurance bodies.

FIREsafe™



Advanced Foam
Technology



Certified
Systems



FIREsafe Technology



THERMALSsafe
Performance



The investments we made in the lines in the Leuze facility ensures that we are able to respond to your needs and requests even faster than before.

THERMALSsafe

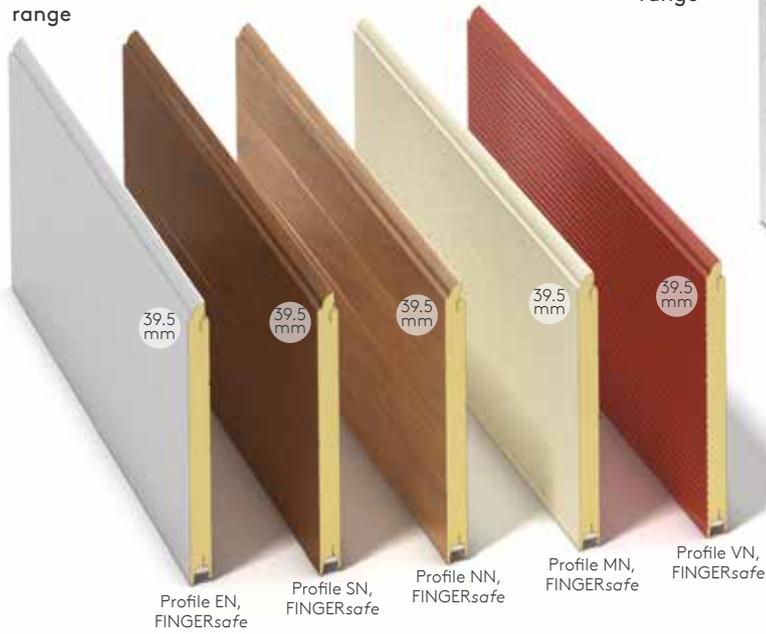
THERMALSsafe door with the best values in terms of air-permeability classification – class 4, and superior thermal performance – U-values with an improved performance as high as 26%, achieved for the first time on a sectional door.

THERMALSsafe™

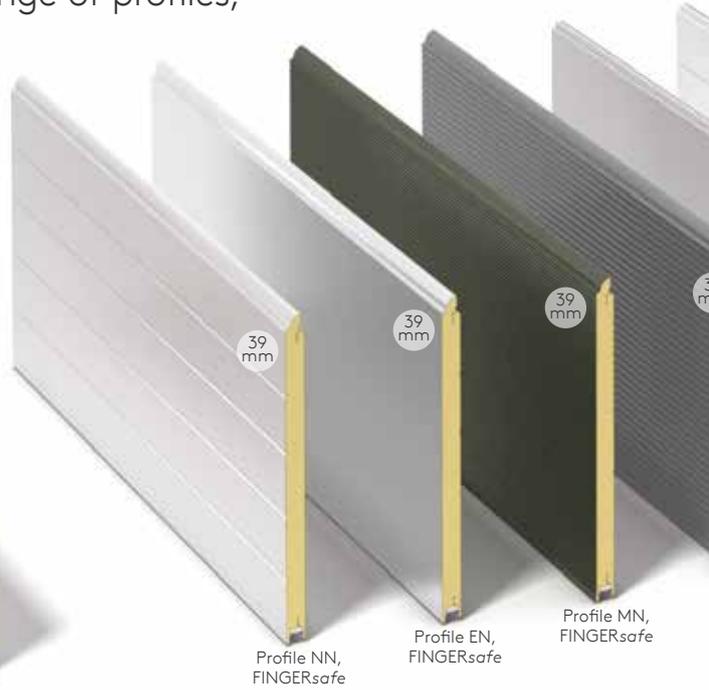
Technical Information

We propose a range of products with unrivalled quality within the insulated sectional door market. Our solutions have exceptional thermal and fire performances and are available in a wide range of profiles, dimensions, colours and finishes.

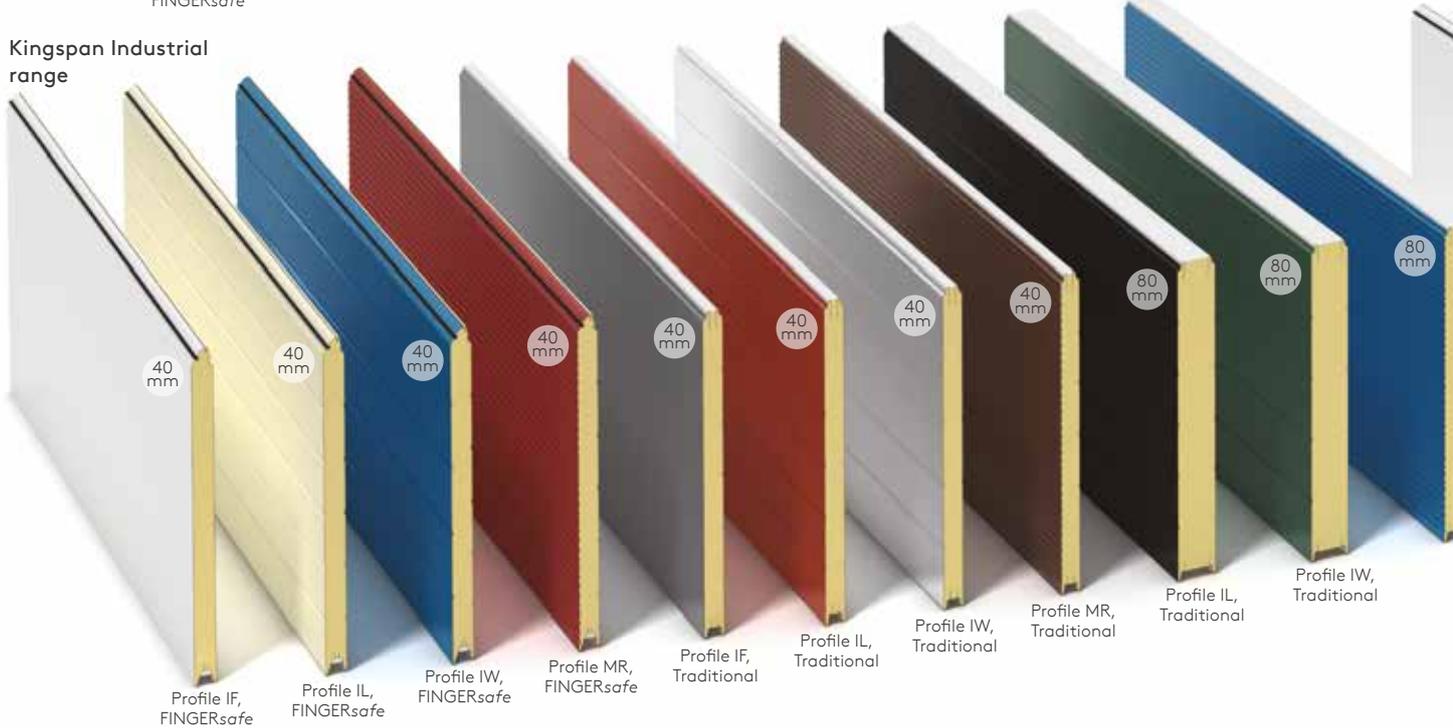
Hoesch Residential range



Hoesch Industrial range



Kingspan Industrial range





Kingspan Residential range



Technical Information

Application

The Kingspan and Hoesch range of insulated sectional door systems are designed for industrial and residential applications.

Available lengths and packaging

There are 16-18 panels per pack for the Kingspan range and 16-25 panels per pack for the Hoesch range.

Available heights

Please consult the below table.

Available lengths

Panels are available between 1.9 m-13.4 m.

Dimensions and heights

Range	Joint	Thickness	Finish	Height		
Kingspan	FINGERsafe	40	Standard	460		
				500		
				530		
			560			
			610			
			460			
	Traditional (TRAD)	40	Standard	500		
				530		
				560		
			610			
			Aluminium	500		
				610		
610						
Hoesch	FINGERsafe	39.5	Standard	500		
				553		
				610		
			Traditional (TRAD)	39	Standard	488
						500
						610
	Standard	488				
		500				
		610				
	Traditional (TRAD)	60	Standard	488		
				500		
				610		
Standard			488			
			500			
			610			
Traditional (TRAD)	80	Standard	488			
			500			
			610			
		Standard	488			
			500			
			610			

Insulation

IPN FIREsafe rigid polyisocyanate foam with a density of 41 kg/m³. The PUR rigid polyurethane option has a density of 39 kg/m³.

Sheets and finishes

External sheet of 0.45 mm or 0.6 mm and internal sheet of 0.37 mm. Structured steel with zinc coating and a 15µm primer.

Internal

- Kingspan – 25 µm, bright white, RAL 9010 polyester. Possibility to be smooth or stuccoed during the manufacturing process, depending on the panel.
- Hoesch – 15 µm polyester.

External

- 25 µm polyester. Possibility to be smooth, stuccoed or wood grained during the manufacturing process, depending on the panel.
- 30 µm polygrain, polyurethane paint.
- 35 µm deep mat, polyester.
- 140 µm (+/- 7%) semi-rigid film polyvinyl chloride (PVC) / polyolefin, decorated with rotogravure printing. Possibility to be smooth or wood grained during the manufacturing process, depending on the panel.
- 200 µm, XL Forte range, thermoplastic paint.
- 15 µm primer, also available for painting. Possibility to be smooth, stuccoed or wood grained during the manufacturing process, depending on the panel.

For more information on our colours, please contact your sales person.

Painting the panels

The panels can easily be painted if the surface to paint is suitably prepared by:

- 1 the use of a scouring pad (Scotch Brite or similar) to allow the painting to stick to it;
- 2 removal of any dust or grease using white spirit;
- 3 the use of a paint plasticizer (Powdersoft or similar), then a grip test of GT 0 can be made.

Seals, tapes and films

Panels with Kingspan FINGERSafe joints

The panel nose has a factory installed EPDM seal to ensure intermediary air and water tightness between the panels.

Panels with Hoesch FINGERSafe joints

A compression seal is applied in the female part of the panel.

Panels with Kingspan Traditional joints

A compression seal is applied in the female part of the panel.

The nose of the male side of the panel is covered with tape.

Panels with Hoesch Traditional joints

A compression seal is applied in the male and female part of the panel.

A removable protective film is applied in the factory on both the internal and external facing of the panel.

Please refer to Annex 1 for the technical details.

Hinge reinforcement

Hinge reinforcement is provided by two metal plates of 20 x 0.7 mm.

Kingspan range of insulated sectional door systems

We advise to use hinge fixing screws of 15 mm.

Hoesch range of insulated sectional door systems

Hinge reinforcement is provided by the return of the inner and outer sheets in the foam.

We advise to use fixing screws with a length of 25-30 mm.

Technical Information

Tolerances

Cut length	+/- 5 mm
Thickness	+2 mm/-1 mm
Internal / external height	+/- 2 mm
Bending of panel	+/- 3 mm of height and 0,2% of the width (length)
External flexion tolerances	2 mm maximum
Height flexion tolerances	3 mm maximum
Squareness	+/- 1% of the width of the panel (length)
Gaps	5 mm maximum on nose, 10 mm on panel end
Panel flatness	No visible defects when the panel is placed in vertical position and seen at 1500 mm in a arc of +/- 60 degrees compared to the perpendicular

Thermal performances

Thermal

Residential insulated sectional door systems have a thermal conductivity coefficient or U coefficient of:

- A 40 mm Kingspan system, FINGERsafe & Traditional joint with PUR insulation – 0.51 W/m²K
- A 40 mm Kingspan system, FINGERsafe & Traditional joint with IPN insulation – 0.48 W/m²K
- A 80 mm Kingspan system, Traditional joint with IPN insulation – 0.25 W/m²K
- A 39 mm Hoesch system, Traditional joint with PUR insulation – 0.57 W/m²K
- A 39 mm Hoesch system, FINGERsafe & Traditional joint with PUR insulation – 0.56 W/m²K
- A 60 mm Hoesch system, Traditional joint with PUR insulation – 0.38 W/m²K
- A 80 mm Hoesch system, Traditional joint with PUR insulation – 0.29 W/m²K

Through the continuous manufacturing process, the closed cell foam sticks to the external and internal sheets ensuring which prevents the absorption of water and ensures thermal reliability in the long-term.

Please refer to the table below.

Door opening mm (LxH)	3000 x 3000	4000 x 4000	4500 x 4500
	U-value (W/m ² K)		
Without THERMALsafe	1,14	1,04	1
With THERMALsafe	0.89	0.85	0,83

Fire performance

Our insulated sectional door systems with IPN FIREsafe have a fire resistance of B – s2, d0.

Acoustic performance

Residential insulated sectional door panels have a weighted sound reduction number of (Rw) 25db.

Evaluations and certifications

Kingspan and Hoesch FINGERsafe joints in their insulated sectional door system ranges comply with the European Safety Standard EN 12604 and must be used on doors of less than 2,500 mm height.

Test results to the requirements of the harmonized standard EN 13241-1: 2003 + A1:2011

SP Swedish National Testing and Research Institute (Certified Organization No. 0402) performed tests on a certain number of mounted doors.

Wind Resistance Class 5 (1300 Pa)

Wind resistance according to EN 12424 – Classification.

Air permeability according to EN 12427 – test method

Door opening mm (LxH)	3000 x 3000	4000 x 4000	4500 x 4500
	Airtightness		
Without THERMALsafe	Classe 2	Classe 2	Classe 2
With THERMALsafe	Classe 4	Classe 4	Classe 4

Resistance to water penetration

Class 3 without windows according to EN 12489.

Quality

The Kingspan and Hoesch ranges are manufactured in our factories that are ISO 9001: 2015 certified (quality system), ISO 14001: 2015 (environment) and OHSAS 18001: 2007 (health and safety at work).

Guarantee

See our general Sales Conditions.



Kingspan ECOsafe and FIREsafe Isophenic (IPN) Foam Technology

A new level of protection against fire.

Kingspan IPN FIREsafe Technology is a Kingspan self-blended foam offering an exceptional thermal performance and a superior fire protection. Protection of people, property & goods is our main priority. The smoke emissions are low and a protective barrier is formed when our Kingspan IPN FIREsafe Technology is burnt compared to other insulating materials.

The FIREsafe foam core replaces the standard polyurethane (PU) technology with Kingspan's own Isophenic (IPN) Technology, which is a uniquely developed high index polyisocyanurate (PIR), the benefits of which have been used extensively throughout Europe for a number of years in our insulated roof and wall panel systems.

All Kingspan panels for both residential and industrial applications could be manufactured to this specification as standard and will be fully certified to EN 13501 which is the European wide classification for construction products for fire resistance and reaction to fire.

Within this classification, there are two tests:

- EN 13823 which measures reaction to fire
- EN 11925-2 which is an ignitability test.

Our IPN products, in line with the work we have done to date and from our experience with insulated roof and wall panels, will be classified as follows:

B s2 d0

B is a measure of reaction to fire.

s2 is a measure of smoke.

d0 is a measure of ignitability.

Kingspan
FIREsafe™
Door Panel

Kingspan
ECOsafes™
Door Panel

THERMALsafe Door

Thermal efficiency and reduced air leakage are both critical aspects in products designed for modern living and both must be addressed equally.

Insulated Sectional Door Components is pleased to launch a package of components for a truly door with the best values in terms of air-permeability classification – class 4*, and superior thermal performance – U values with an improved performance of an average, 22%***, achieved for the first time on a sectional door.



*Class 4 $\leq 3\text{m}^3/\text{m}^2\text{h}$ loss of air through the door.
** See table on page 16.

What is the U-value of a sectional door?

The U-value of a material is a measure of the amount of heat that passes through a surface area of 1 m² for each degree of temperature difference between the inside and outside. Therefore, the lower the U-value, the more energy-efficient the material is. The U-value is a function of the thickness of the material and the materials' thermal conductivity.

Regarding sectional doors, a common misconception is to take U-value of the panel (or even just the U-value of the foam) and to apply it to the whole door.

To properly calculate the true U-value of a sectional door, one needs to take into account not only the U-value of a sectional door panel (which differs from one manufacturer to another) but also to include the panel joints, sides seals and any other places that the heat can be conducted through on an assembled door.

THERMALsafe™

What is the air-permeability of a sectional door?

Air-permeability is simply the amount of airflow which can pass through the door leaf, in principle through the panel joints, the sides, the top and bottom of the door.

To truly improve the thermal performance of a sectional door, one must take into account both: the U value of the door as a whole, and its air-permeability performance.

Kingspan Door Components has achieved this in its new product; the THERMALsafe door. This incorporates :

- THERMALsafe panel (40 mm) achieving the best values in terms of energy efficiency (U value) thanks to:
 - THERMALsafe foam technology
 - The panel joints design (duo-shell panel concept with a double sealing system, eliminating cold bridging)
- A unique range of THERMALsafe components exclusive to Kingspan.

THERMALsafe Components

A package of components to make your Kingspan door – a THERMALsafe door.

Highly conductive materials such as steel and aluminium have been replaced by high-quality polythermalyne profiles and endcaps, thereby substantially reducing thermal bridging (cold / heat transfer). The side seal (weatherseal) has been redesigned completely to minimize the air leakage and cold bridging through the door frame.

 Thermal conductivity reduced  Improved air-tightness

THERMALsafe panel

THERMALsafe conductivity value than of any other sectional door panel currently available on the market.

Thermal conductivity through the panel joint is reduced due to a duo-shell panel concept: the panel joints* have been designed to ensure a thermal breaking between the internal and external sheets of the panel.

A double seals system provides a perfect air-tightness on the panel joints.

This duo-shell panel design together with a high-performing THERMALsafe insulation core (foam) gives an outstanding thermal performance to a sectional garage door.

All this achieved based on a panel of a standard thickness of 40 mm.

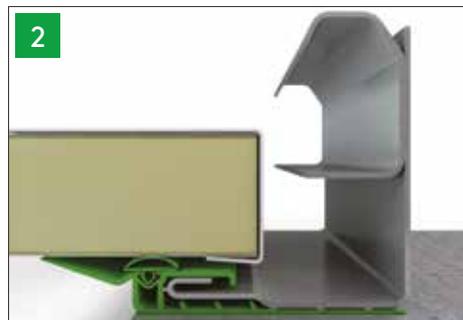


FINGERsafe panel

THERMALsafe weatherseal**

The weatherseal (side seal) placed on the vertical angles and the lintel eliminates the thermal bridging created by the contact with the building's cold surfaces (wall, concrete, steel etc.).

The compression seal, placed into the weatherseal, improves air-tightness.



View from the top

THERMALsafe endcaps

THERMALsafe endcaps are placed to the left and right of each section of the door, eliminating the cold bridging between the internal and external side of the panel. They are available in white polythermalyne.



*For both panel types: the FINGERsafe and the Traditional.

**The weatherseal has been developed together with the compression seal but the two components are available as separate parts.



THERMAlsafe bottom profile



Placed at the base of the bottom panel, this THERMAlsafe component eliminates cold bridging between the interior and exterior of the door. It is available in black polythermalyne.

A bottom seal to slide into the bottom profile, it greatly reduces airpermeability beneath the door.



THERMAlsafe top and bottom profile

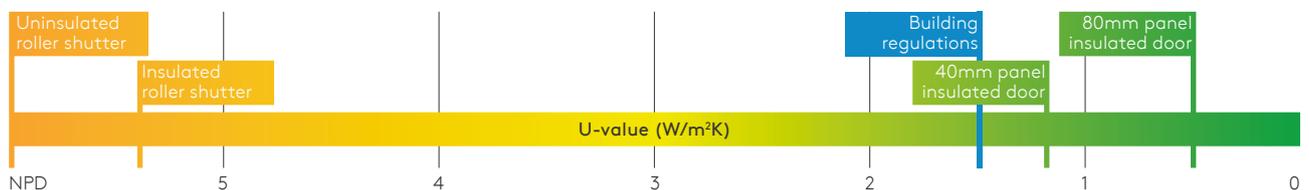


Placed at the bottom or at the top section of a door of which the bottom or top joint of the panel has been cut; this polythermalyne profile also eliminates cold bridging. THERMAlsafe top and bottom profile is available in white or black finish.



Profile placed at the bottom

Thermal performance of installed doors compared to regulations



THERMALsafe Performance Comparison

Performance comparison with or without THERMALsafe components :

Door opening mm (LxH)	Residential doors : EasyClick 200 / EasyClick 70			Industrial doors		
	2500 x 2000	3000 x 2125	4500 x 3000	3000 x 3000	4000 x 4000	4500 x 4500
	U-value (W/m ² K)					
Without THERMALsafe components	1,33	1,25	1,06	1,14	1,04	1
With THERMALsafe components	0,99	0,94	0,84	0,89	0,85	0,83
Improvement	26%	25%	21%	22%	18%	17%
Mono-shell FINGERsafe panel 60 mm*	1,20	1,12	0,92	1,01	0,91	0,87

Comparison table of the U value for residential and industrial garage doors based on Kingspan FINGERsafe panel (duo-shell) 40 mm and components.
*Indicative values.

	Air-permeability					
Without THERMALsafe components	Classe 2	Classe 2	Classe 2	Classe 2	Classe 2	Classe 2
With THERMALsafe components	Classe 4	Classe 4	Classe 4	Classe 4	Classe 4	Classe 4
Improvement	300%	300%	300%	300%	300%	300%
Mono-shell FINGERsafe panel 60 mm*	Classe 2	Classe 2	Classe 2	Classe 2	Classe 2	Classe 2

Comparison table for air-permeability for residential and industrial garage doors based on Kingspan FINGERsafe panel (duo-shell) 40 mm and components.
Air-permeability Δp at a pressure of 50 Pa [m³/m²h] - class 2 \leq 12 m³/m²h - class 4 \leq 3m³/m²h loss of air through the door.
*Indicative values.

With THERMALsafe, you achieve :

- A sectional door with the best thermal performance (U-value)
- A sectional door with the best air-permeability class

Without THERMALsafe :

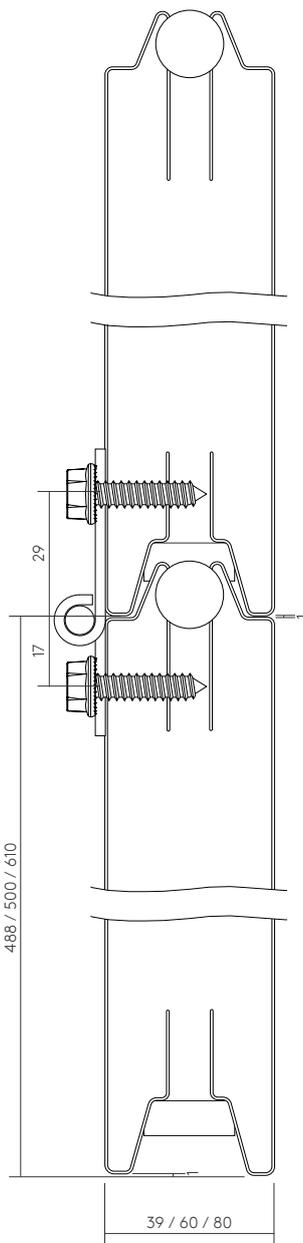
- Significant cost implication
- Extra hardware range – just few components
- Difficulty with new installation

Available for :

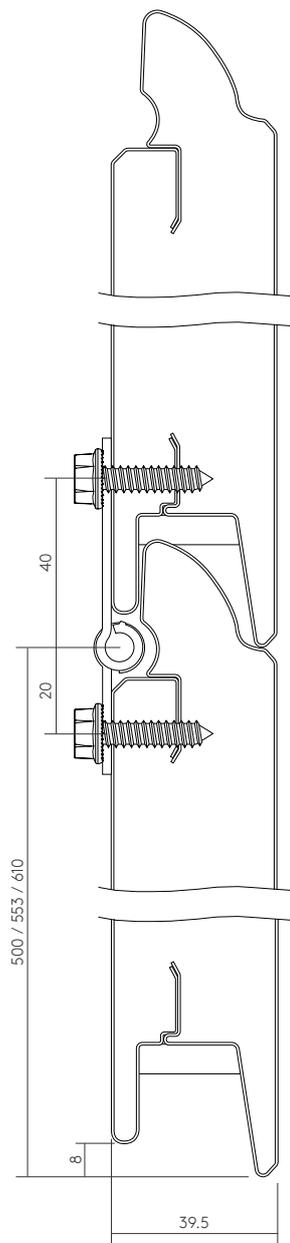
- Residential doors – based on FINGERsafe panel of 40 mm; EasyClick 200 and EasyClick 70 system.
- Industrial doors – based on FINGERsafe and Traditional panel of 40 mm; for all lift types.

Annex 1

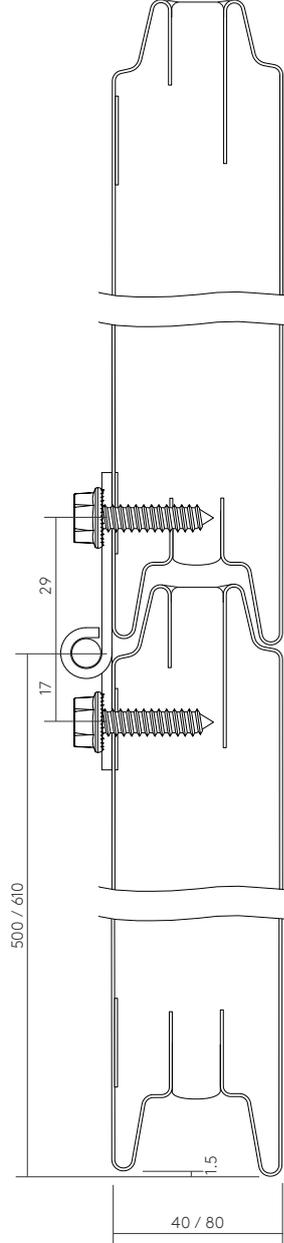
Hoesch system,
Traditional joint



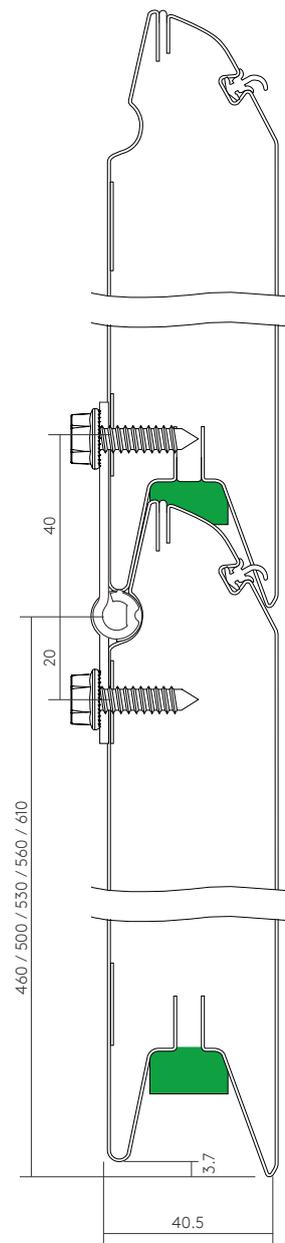
Hoesch system,
FINGERsafe joint



Kingspan system,
Traditional joint

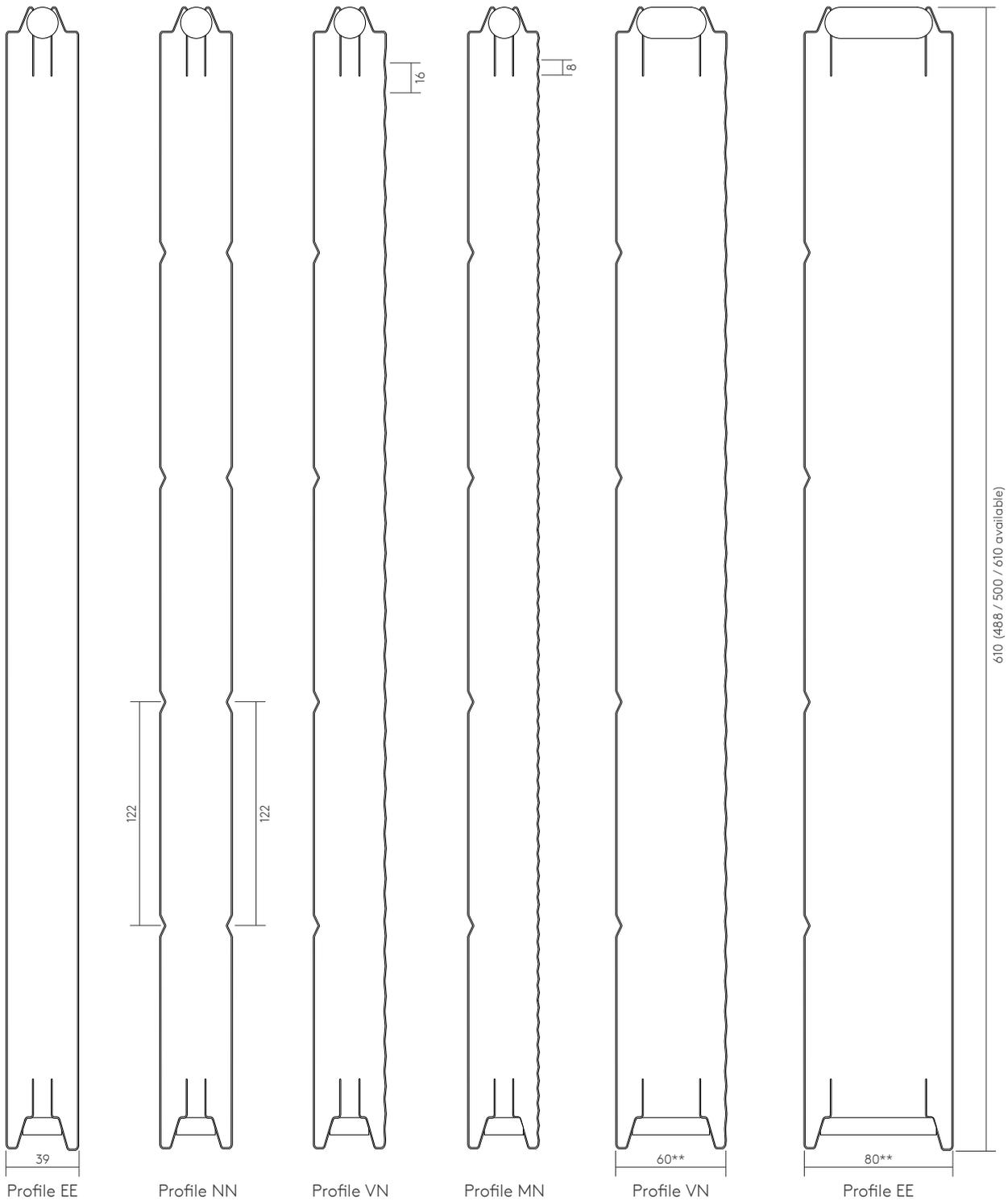


Kingspan system,
FINGERsafe joint



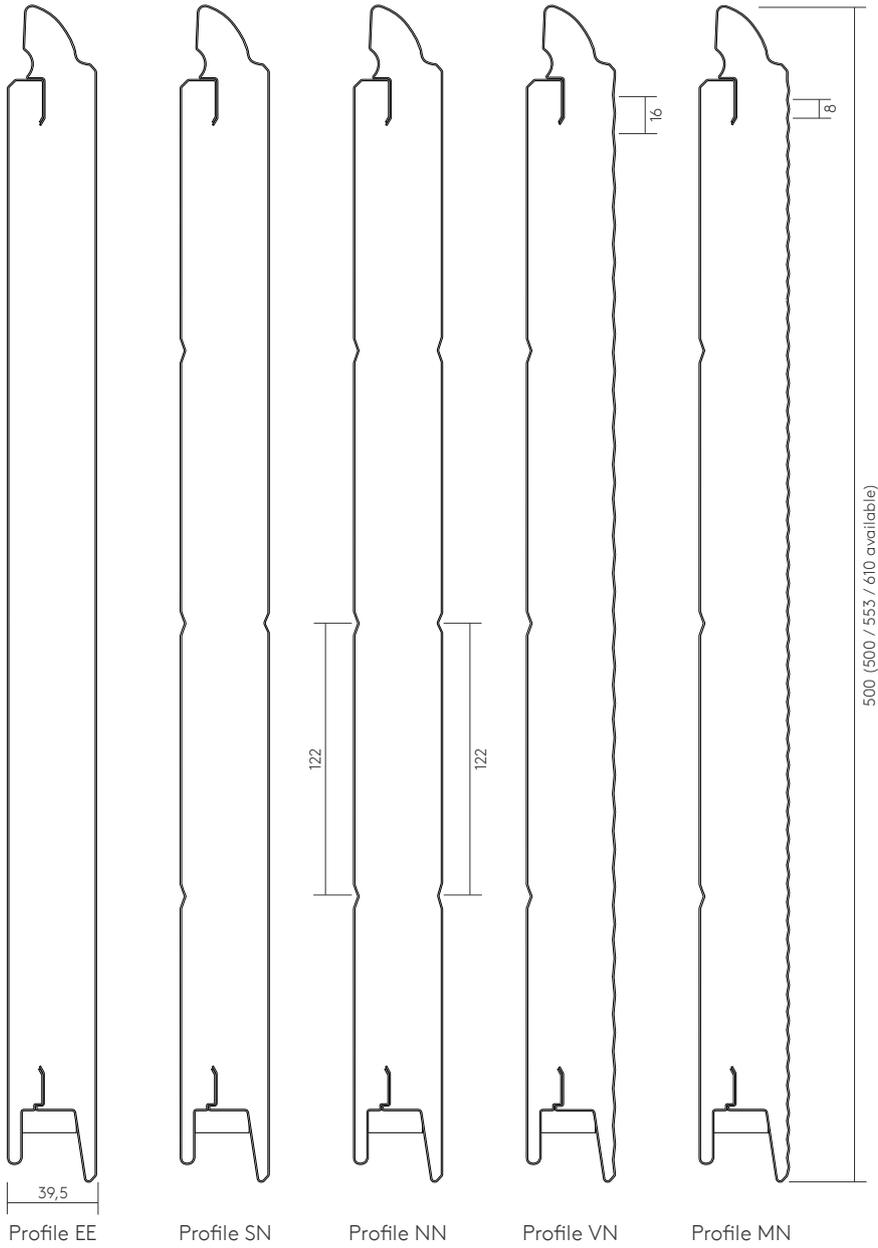
Annex 2

Hoesch range of industrial sectional doors, Traditional joint



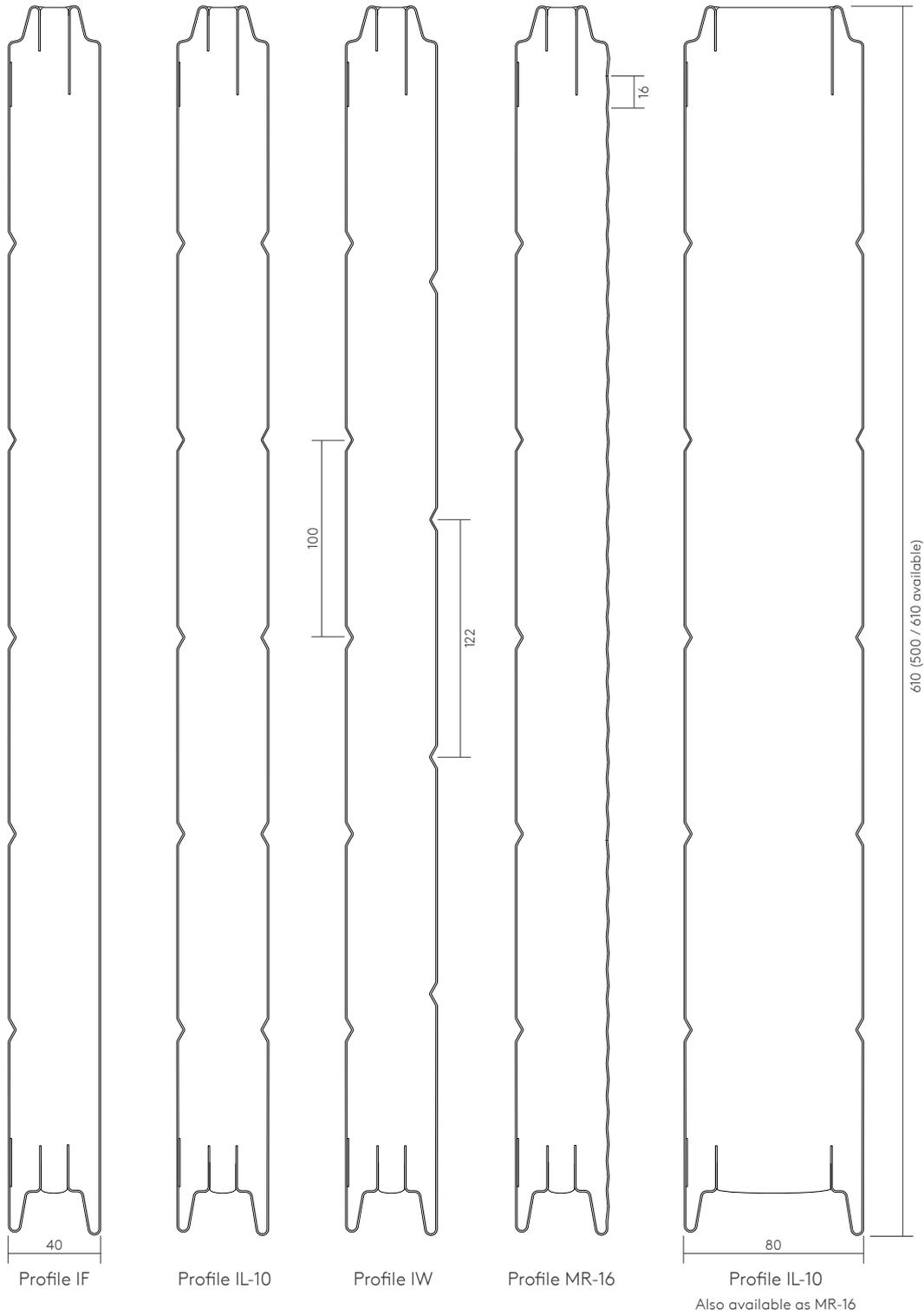
**All profiles are available in 60 and 80 mm.

Hoesch range of industrial and residential sectional doors, FINGERsafe joint

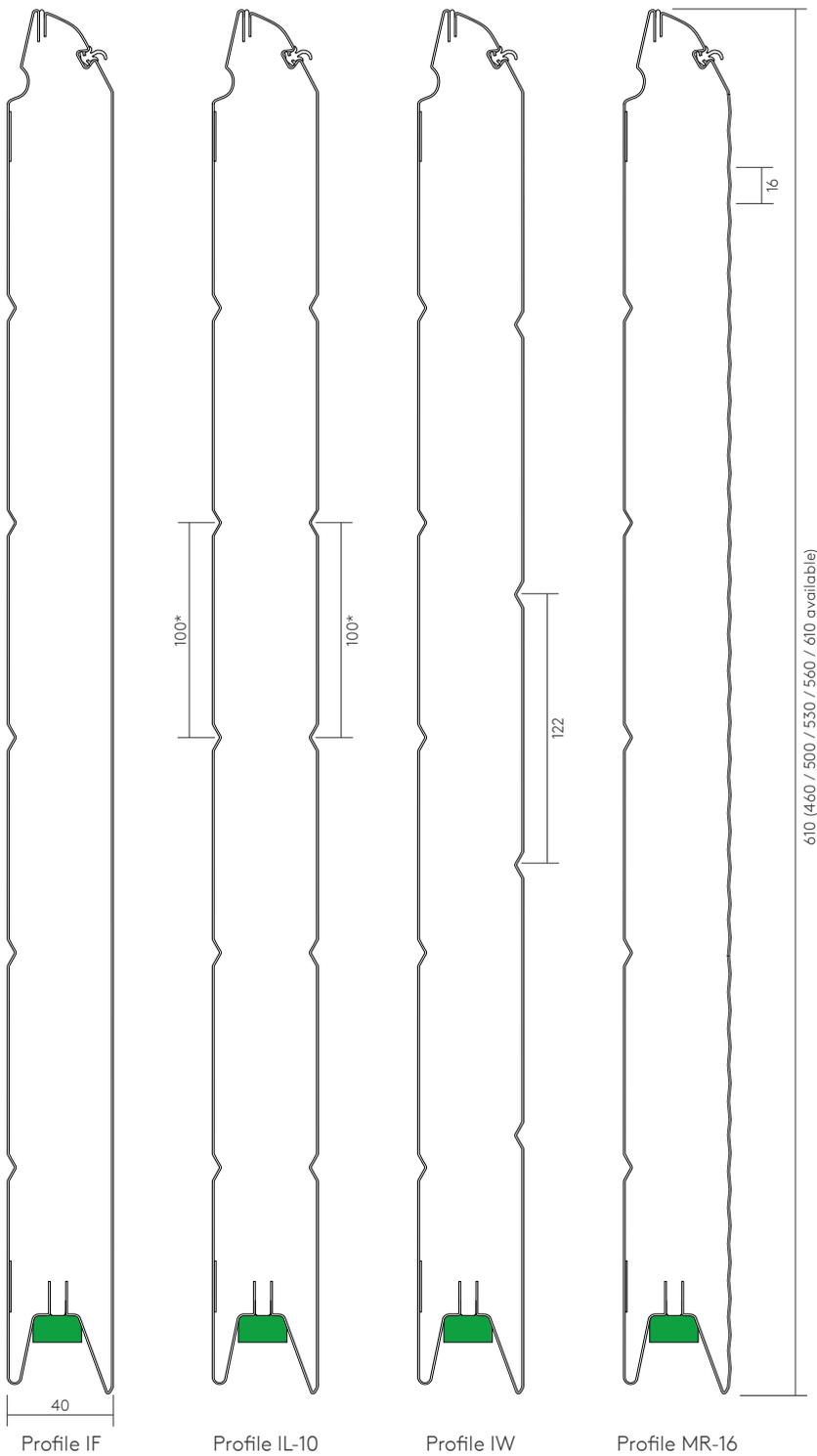


Annex 3

Kingspan range of industrial sectional doors, Traditional joint



Kingspan range of industrial sectional doors, FINGERsafe joint

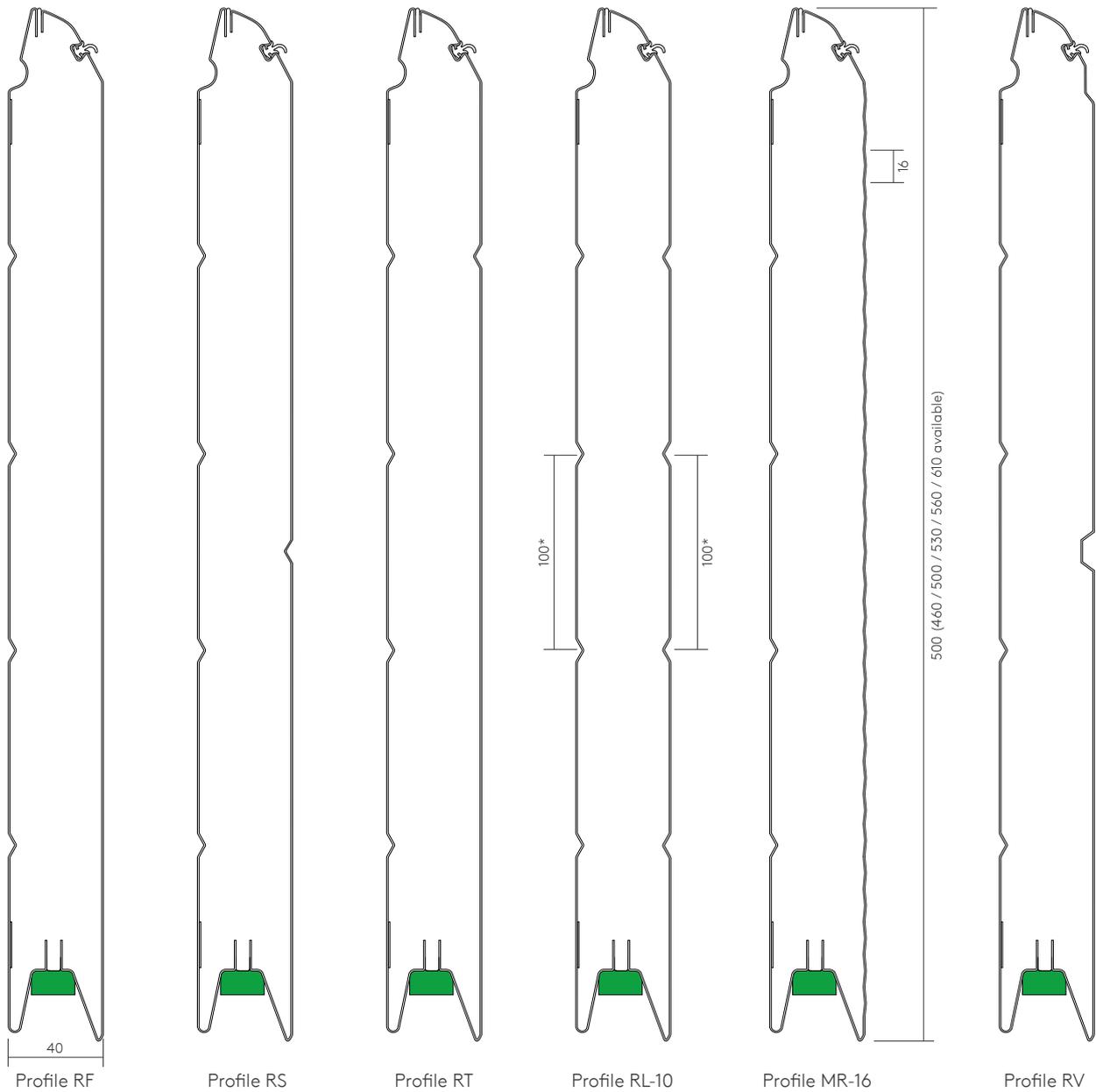


* +/- 100 mm variable depending on the height of the system.

Compression seal only for **THERMAsafe**™ version

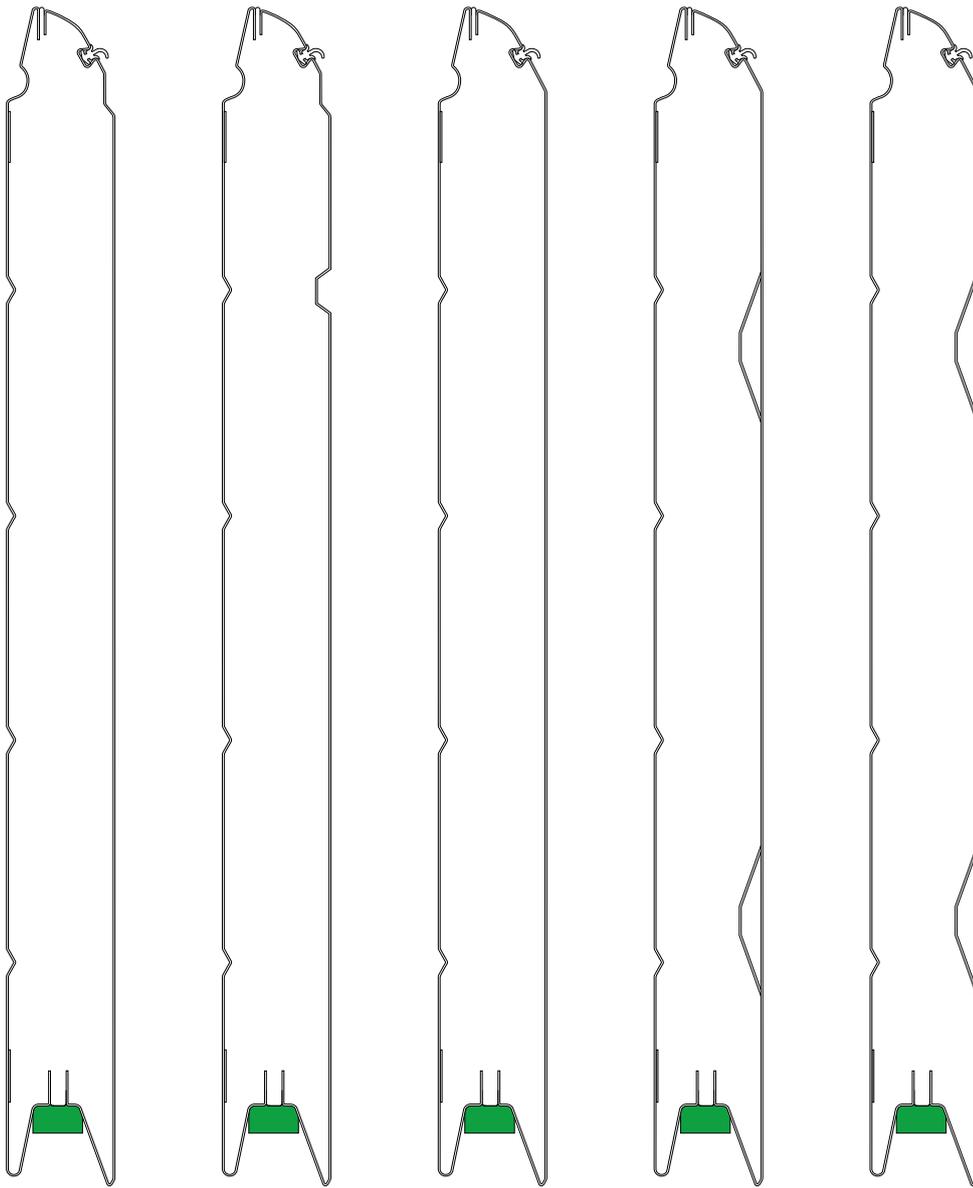
Annex 3

Kingspan range of residential sectional doors, FINGERSafe joint



* +/- 100 mm variable depending on the height of the system.

Compression seal only for **THERMAlsafe** version



Profile SV

Profile SVRT

Profile VL
(Vertical line)

Profile RC
520 x 330

Profile RK
507 x 340



Need support?
ServiceHub.KDC@kingspan.com



Would like more information on our Hardware?
Hardware@kingspan.com



Did you know we have a fully automated online ordering system, EasyOrder?



More information:
info@kingspandoor.com or +32 69 45 24 60

Global

Kingspan Door Components S.A.

Zone Industrielle de l'Europe 1A
7900 Leuze-en-Hainaut, Belgium

T: +32 (0)69 86 82 22

F: +32 (0)69 86 82 20

E: info@kingspandoor.com

www.kingspandoor.com

For the product offering in other markets
please contact your local sales representative
or visit www.kingspan.com

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04/2019

