

*The Ceramic Tile K20 System is a ceramic tile facade installed on a specifically designed Benchmark Karrier Panel.*

## CERAMIC TILE K20



### FAÇADE DATA

#### Materials

The Ceramic Tile K20 is an extruded ceramic panel according to DIN EN 14411, group Alla.

Ceramic Tile K20 tiles are available in a wide range of colours and glazes. There is a natural material tolerance, hence colour can vary. Other colours and tile sizes are available.

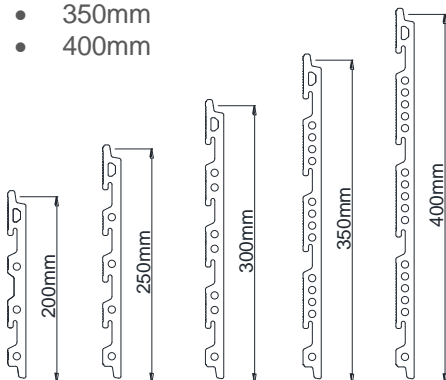
#### Dimensions

Tile lengths available from 400mm to 1200mm, with lengths available any size in-between in 1mm increments.

Tile thickness: 20mm

Standard Tile Heights (center to center of joint):-

- 200mm
- 250mm
- 300mm
- 350mm
- 400mm



#### Product Tolerances

Length (up to 1200mm)	-1mm	+1mm
Width	-2mm	+2mm
Thickness (20mm)	-1mm	+1mm
Flatness (per metre)	-0.4%	+0.4%
Rectangularity	-0.3%	+0.3%

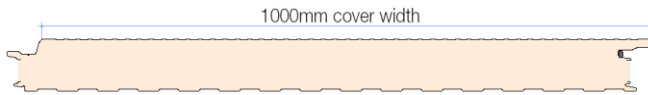
Thickness, sides' straightness, rectangularity and surface flatness are all in accordance with DIN EN 14411.

#### Fire

The Ceramic Tile K20 façades have a Class A1 rating, and are non-combustible as defined by Building Regulations.

# Product Data Sheet

## KARRIER PANEL DATA



### Product Tolerances

Length	-2mm	+2mm
Width	-2mm	+2mm
Thickness	-2mm	+2mm
End Squareness	-3mm	+3mm
Flatness (per metre)	-2mm	+2mm

### Available Lengths

Standard length is 1.8 to 12 metres. Panel lengths up to 17 metres are available. Panels less than 1.8 metres long can be supplied and are subject to an extra charge. These panels cannot be end lapped.

### Materials

#### Steel Substrate

- S220GD+ZA hot-dip zinc/aluminium Galfan coated metal to BS EN10214: 1992.
- Standard external sheet thickness 0.63mm, standard internal sheet thickness 0.4mm.

#### Coatings - External Sheet

- Kingspan XL Forté TM. Colour is Merlin Grey.
- Reverse side of sheet coated with a light grey polyester coating.

#### Coatings - Internal Liner

- Standard polyester coating developed for use for the internal lining of insulated panels. Standard colour is "bright white" with an easily cleaned surface.
- Foodsafe hygienic coating developed for use where the liner is exposed to foodstuffs and is regularly cleaned. Colour white.
- Kingspan XL Forté TM coating for internal high humidity environments. Colour white.
- Reverse side of sheet coated with a light grey polyester coating.

### Insulation Core

Polyisocyanurate (PIR): EcoSafe with zero Ozone Depletion Potential (zero ODP).

### Factory Applied Side Joint Seal

All side joints have a factory-applied seal fitted into the groove to automatically seal the joint between panels.

### Fire

The steel outer and inner facings of the Karrier Panel have a Class 1 surface spread of flame to BS476 - 7: 1987, and are Class 0, as defined by Building Regulations.

### Biological

Benchmark insulated panels are normally immune to attack from mould, fungi, mildew and vermin. No urea formaldehyde is used in the construction, and the panels are not considered deleterious.

# Product Data Sheet

## SYSTEM WEIGHT

The Ceramic Tile K20 System has an overall typical weight depending upon Karrier Panel thickness:

Karrier Panel Thickness (mm)	60	70	80	100	120	140	150
Weight (Kg/m <sup>2</sup> )*	37.5	37.9	38.3	39.1	39.9	40.6	41.1

\*Based on complete system - panel, rail and façade weight inclusive. For Project Specific weights, please contact Benchmark Technical Services Department.

## SYSTEM ATTACHMENT

### Method of Attachment

Ceramic Tile K20 tiles are supported by the vertical omega rails, which are attached to the face of the Karrier Panel using the KSAFL6 fasteners. System clamps can be used to secure piece of cut tile as required.

## SYSTEM PERFORMANCE

### Weathertightness

The Ceramic Tile K20 System has been tested to the CWCT standard test methods for Rainscreens and achieved the following results:

- Air permeability: Class A4 (600 Pa)
- Watertightness (static pressure): Class R7 (600 Pa)
- Watertightness (dynamic pressure): Class R7 (600 Pa)
- Resistance to wind: 2400 Pa serviceability, 3600 Pa safety
- Impact: BS 8200:1985 Soft Body impact at an impact energy of 500 Nm – Passed

## Thermal Insulation

Thermal Transmittance (U value) calculated in compliance with Building Regulations Approved Documents L2A & L2B (England & Wales), Technical Handbooks Non-Domestic Sections 6 (Scotland), Part F2 (Northern Ireland) and Part L (Republic of Ireland - based on the Overall Heat Loss Method).

Karrier Panel Thickness (mm)	60	70	80	100	120	140	150
U-value (W/m <sup>2</sup> K)	0.35	0.30	0.27	0.21	0.18	0.15	0.135

## Acoustics

The Ceramic Tile K20 System has a single figure weighted sound reduction  $R_w = 24\text{dB}$ .

## Sound Reduction Index (SRI)

Frequency (Hz)	63	125	250	500	1k	2k	4k	8k
SRI (dB)	20	15	17	23	18	25	40	46

## Fire

The Ceramic Tile K20 System has been to Loss Prevention Certification Board (LPCB) LPS1181: 2003: Part 1: Issue 1 Wall Lining Test and achieved Grade EXT-B.


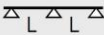
A Grade EXT-A30 specification is available upon request.

The EXT-A30 System has been tested for Fire resistance to BS EN 1364-1:1999 and achieved 53 minutes integrity and 33 minutes insulation.

## STRUCTURAL

### LOAD/SPAN TABLE FOR KARRIER PANEL

(To be checked against unfactored design wind-loads)

Span Condition	Core Thickness (mm)	Load Type	Uniformly Distributed Loads (kN/m <sup>2</sup> )										
			Span L in Metres										
			2.0	2.2	2.4	2.6	2.8	3.0	3.2	3.4	3.6	3.8	4.0
<b>Single-span</b> 	60	Pressure	4.05	3.35	2.89	2.42	2.11	1.79	1.57	1.35	1.19	1.03	0.91
		Suction	3.63	2.95	2.52	2.08	1.79	1.49	1.29	1.08	0.94	0.79	0.69
	70	Pressure	4.83	4.12	3.58	3.03	2.66	2.28	2.01	1.74	1.55	1.35	1.21
		Suction	4.43	3.60	3.09	2.58	2.26	1.94	1.70	1.46	1.28	1.10	0.97
	80	Pressure	5.39	4.85	4.26	3.64	3.21	2.78	2.47	2.15	1.92	1.69	1.52
		Suction	4.98	4.03	3.46	2.88	2.53	2.17	1.93	1.69	1.52	1.35	1.23
	100	Pressure	5.39	4.85	4.48	4.10	3.83	3.56	3.35	2.96	2.67	2.37	2.15
		Suction	5.36	4.78	4.10	3.42	3.00	2.57	2.29	2.00	1.80	1.60	1.46
<b>Double-span</b> 	60	Pressure	4.64	4.11	3.67	3.22	2.76	2.29	1.98	1.66	1.46	1.26	1.13
		Suction	3.93	3.15	2.71	2.26	1.98	1.69	1.51	1.32	1.19	1.06	0.96
	70	Pressure	5.05	4.54	4.19	3.84	3.30	2.75	2.36	1.97	1.73	1.48	1.32
		Suction	4.49	3.60	3.09	2.58	2.26	1.94	1.73	1.51	1.36	1.21	1.10
	80	Pressure	5.39	4.85	4.48	4.10	3.67	3.23	2.77	2.30	2.01	1.71	1.52
		Suction	4.98	4.03	3.46	2.88	2.53	2.17	1.93	1.69	1.52	1.35	1.23
	100	Pressure	5.39	4.85	4.48	4.10	3.83	3.56	3.28	2.99	2.60	2.20	1.94
		Suction	5.36	4.78	4.10	3.42	3.00	2.57	2.29	2.00	1.80	1.60	1.46

#### Notes:

- Values have been calculated using the limit state method in the "European Recommendations for the Design of Sandwich Panels" (ECCS document No.115 2001), taking imposed loads, temperature and creep into account.
- For each value individual and combined load cases with appropriate load factors and temperatures have been considered. These are detailed under "Structural Performance" in Building Design Section.
- The table is for dark coloured panels.
- The following deflection limits have been used:  
Pressure Loading L/100  
Suction Loading L/100
- For intermediate values linear interpolation may be used.
- The actual wind suction load resisted by the panel is dependent upon the number of fasteners used and material of the rail. The fastener calculation should be carried out in accordance with the appropriate standard. For further advice please contact Benchmark Envirocare Technical Services.
- The allowable tolerance between bearing planes of adjacent supports is L/600, where L is the distance between supports.
- Load span tables for spans outside of those shown are available from the Benchmark Technical Services department.

## STRUCTURAL

### LOAD/SPAN TABLE FOR K20 SYSTEM

Windload kN/m <sup>2</sup>	0.50	0.75	1.00	1.25	1.50	2.00	2.50	3.00
Max. span width (m) under positive wind pressure								
Tile Height: 200mm	1.35	1.35	1.35	1.30	1.19	1.03	0.92	0.83
Tile Height: 250mm	1.35	1.35	1.35	1.25	1.14	0.99	0.80	0.67
Tile Height: 300mm	1.35	1.35	1.35	1.32	1.11	0.83	0.67	0.56
Tile Height: 400mm	1.35	1.35	1.25	1.00	0.83	0.63	0.50	0.42
Max. span width (m) under negative wind pressure (suction)								
Tile Height: 200mm	1.35	1.35	1.35	1.35	1.26	1.09	0.98	0.83
Tile Height: 250mm	1.35	1.35	1.35	1.35	1.30	0.80	0.80	0.67
Tile Height: 300mm	1.35	1.35	1.35	1.33	1.11	0.67	0.67	0.56
Tile Height: 400mm	1.35	1.35	1.25	1.00	0.83	0.50	0.50	0.42

# Product Data Sheet

## PACKING

### Ceramic Tile K20

Benchmark Ceramic Tile K20 tiles are delivered on timber palettes. Each palette weighs approximately 750kg. The entire pack is wrapped in polythene.

### Karrier Panel

The Benchmark Karrier Panels are stacked horizontally. Removable hot melt adhesive is laid between each panel. The top, bottom, sides and ends are protected with polystyrene and timber packing and the entire pack is wrapped in polythene. The number of panels in each pack depends on panel length and weight.

Typical pack height is 1100mm.

Maximum pack weight 1500kg.

Karrier Panel Thickness (mm)	60	70	80	100	120	140	150
Panels per Pack	18	14	12	11	9	7	7

### Sea Freight

Fully timber crated packs are available on projects requiring delivery by sea freight shipping, at additional cost. Alternatively, steel containers can be used. Special loading charges apply.

## STORAGE

Pallets should be stored on level ground in a safe, designated area of the site until required. Once opened to remove tiles, the remainder of the pack should be re-covered to protect from weather and site contamination.

## HANDLING

Care must be taken when offloading and moving the ceramic tiles around site to avoid impact damage and from damage that could occur transporting the tiles over rough terrain. When removing tiles from the pallet, do not drag them across the below tile as damage to the surface may result, lift them from the pack.

## SITE INSTALLATION PROCEDURE

Site assembly instructions are available from the Kingspan Benchmark Field Service Department.

## QUALITY & DURABILITY

Benchmark components are manufactured from the highest quality materials to rigorous quality control standards, complying with ISO 9001:2000 standards, ensuring long-term reliability and service life.

## GUARANTEES & WARRANTIES

Benchmark will provide external coating and product guarantees on an individual project basis.



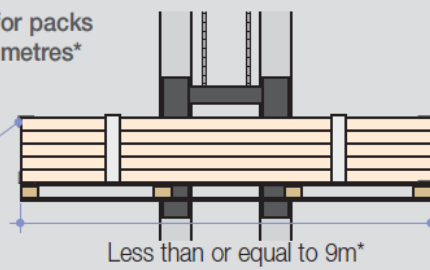
# Product Data Sheet

## DELIVERY AND OFF-LOADING

Transportation of Benchmark Karrier Panel packs to site is by road transport (unless indicated otherwise). It is the customer's responsibility to check the site for restrictions (i.e. entrance to site, power lines etc.) and agree a storage area to be used, also to identify the correct type/methods of off-loading/hoisting facilities to be used i.e. crane, crane forks, lifting beam/ slings and airbags, forklift or specialist lifting equipment.

Always check the 'current' certification of the crane, crane forks, lifting beam, slings, forklift, or specialist lifting equipment prior to carrying out off-loading/hoisting operation (i.e. with correct 'current' SWL Certification).

**Forklift for packs under 9 metres\***



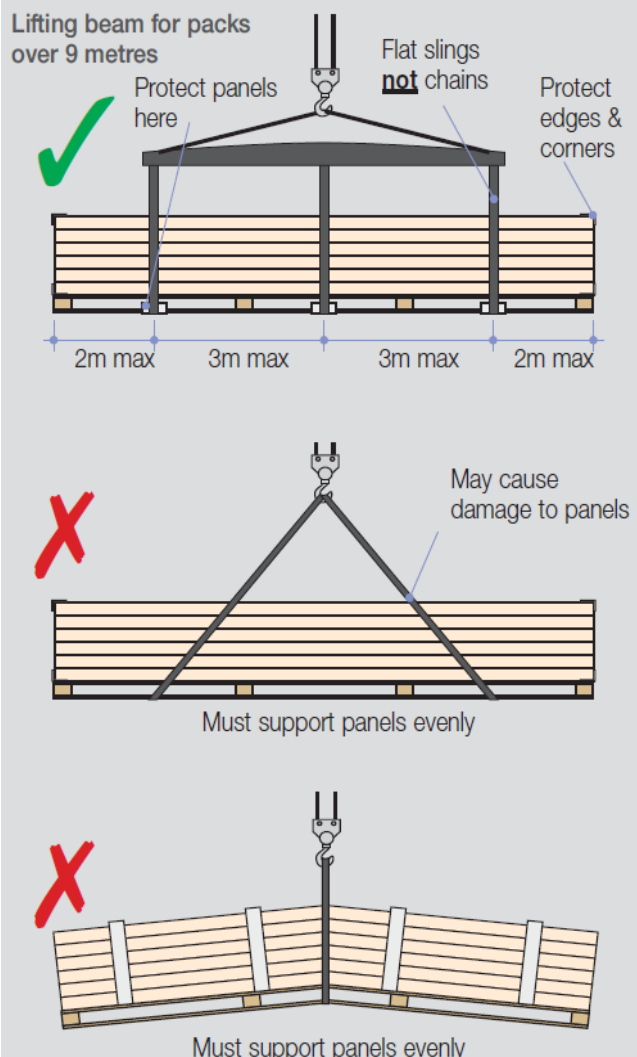
Protect edges & corners

Less than or equal to 9m\*

*\*Packs of panels up to 9 metres can be safely off-loaded with front loaders with the following provisions:*

1. Minimum number of panels in a pack is 3.
2. Ground to be level and reasonably firm.
3. Speed of truck to be 5mph maximum – Extreme care to be taken.

**Lifting beam for packs over 9 metres**



Protect panels here

Flat slings **not** chains

Protect edges & corners

2m max 3m max 3m max 2m max

May cause damage to panels

Must support panels evenly

Must support panels evenly