

# Ventform Plus Data Sheet



Ventform Plus provides an excellent passive gas venting medium under suitably reinforced concrete ground floor slabs with the additional benefit of incorporating below-slab insulation. When used in combination with perimeter vent outlets and a suitable gas resistant membrane system, it will provide an effective method of protecting structures against the ingress of harmful ground gases.

## Key Features

- Highly effective venting medium suitable for ground gas affected sites as part of a gas protection system
- Manufactured from expanded polystyrene (EPS) which achieves a BREEAM rating of A+, in addition to providing a high degree of insulation.
- Available in a range of thicknesses and grades to suit most project requirements
- Robust and easy to install 2.4 x 1.2m (2.88m<sup>2</sup>) panels.
- Resistant to UV light and water. Are manufactured with a flame retardant (FR) additive.

## Installation

The procedure for installing Ventform Plus panels is straightforward; however the following points should be adhered to:

- Ensure that the Ventform Plus panels are placed upon a firm, level surface. In ground-bearing situations, the subgrade should be designed to accept the dead and live load concentration transferred through the legs of the panels.

- If cutting is required, this can be carried out using a fine tooth saw or hot wire cutter (available for hire from Cordek – please contact our sales team on 01403 799600).
- Individual panels should be butted together, staggering the joints where possible, with taping of the joints using the Cordek Formwork Tape to avoid any grout loss between them unless they are to be covered with a membrane.
- Further information relating to installation can be found within the Ventform Plus Installation Guide, available for download from [www.cordek.com](http://www.cordek.com).

## Storage & Handling

All products are delivered in a polythene wrapping and are clearly labelled. Individual panels can be manually handled and offloaded upon delivery, depending on their weight - please consult the panel weight table on page 3. Please ensure you follow manual handling regulations.

Due to the relatively light nature of the product, all packs of Ventform Plus should be weighted down or secured should they be stored outside prior to installation.

For further information on the full range of VOC & Ground Gas Protection, please contact the Cordek technical team on 01403 799600, [techsupport@cordek.com](mailto:techsupport@cordek.com) or consult our website at [www.cordek.com](http://www.cordek.com).



## Product Data

The specification of Ventform Plus panel should be based upon the required clear void equivalent and the maximum loading conditions that it will be required to support. This information is provided in the table below, however please contact the Cordek technical team should further assistance be required.

### Dimensions and Performance Characteristics

Ventform Plus Panel Type	Minimum Overall Depth (mm)	Leg Depth (mm)	Clear Void Equivalent (mm)	Maximum Load Capacity (kN/m <sup>2</sup> )	Nominal ventilated cross sectional area as seen in elevation (mm <sup>2</sup> per m width of floor)
40/20	80	40	19	20	11,500
40/45	80	40	19	45	11,500
60/45	100	60	30	45	18,200
80/13	150	80	60	13	41,200
130/13	200	130	100	13	67,300

Panel size: 2.4 x 1.2m (2.88m<sup>2</sup>) Maximum Panel Depth = 600mm.

### Structural Performance

#### Suspended Slabs:

The appropriate panel type should be selected according to the proposed finished thickness of the concrete slab. To limit the maximum anticipated compressive deformation to 1% of the panel thickness, the maximum uniformly distributed load (UDL) carried by the panels during the initial period (1 to 16 hours) from commencement of the concrete pour must not exceed the maximum load capacity of the panels indicated in the table below. The design UDL should include the weight of the wet concrete and an allowance for heaping of the concrete during pouring. The minimum allowance for heaping should be taken as 1.5 kN/m<sup>2</sup>, but may need to be increased depending on the methods used for placing and compacting the concrete.

#### Ground Bearing Slabs:

The panel type proposed should be selected so that it also limits the anticipated maximum long-term (50-year) compressive creep deformation to the level determined by the structural design engineer responsible for the design of the building. This will depend on the type of building and its intended use. Anticipated 50-year compressive creep deformations and permissible design loads for each panel specification are given in the table below. In all cases, the design load should be taken as the maximum combination of unfactored dead and imposed load likely to be transmitted to the panels, determined in accordance with BS EN 1990 : 2002 and BS EN 1991-1-1 : 2002, and their UK National Annexes.

Panel Specification		Maximum permissible design load to limit 50-year creep deformation to 2% (kN/m <sup>2</sup> )
Ventform Plus Panel Type	Maximum load-carrying capacity of the panel (kN/m <sup>2</sup> )	
40/20	20	13
40/45 and 60/45	45	30
80/13 and 130/13	13	9

For both suspended and ground-bearing floor slabs, the structural engineer responsible for the design of the building should confirm the adequacy of the bearing substrate to carry maximum short and long-term design loads transmitted through the panels.

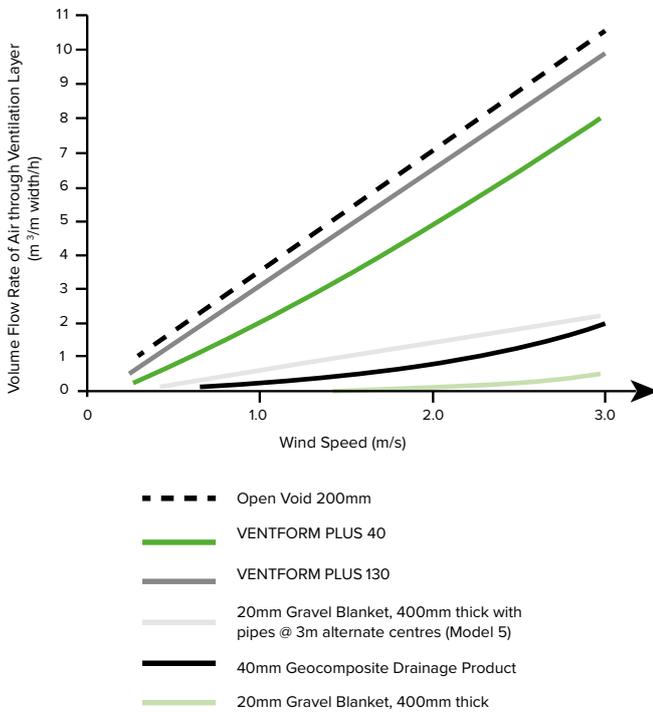
Provision should also be incorporated into the design to limit short-term concentrated loads that could cause localised damage to the panels and gas-resistant membrane (for example, reinforcement spacers). Reinforcement spacers should be selected with large base areas and should be located at sufficiently close centres to ensure that the maximum load beneath the spacer does not exceed the maximum short-term load carrying capacity of the panel. Where necessary, load spreader plates should be specified beneath the reinforcement spacers.



**Result of CFD Modelling**

By comparison, other methods of venting ground gases can be compared to the Cordek Ventform Plus in terms of performance using the CFD modelling data provided below.

**Volume Flow Rate v Wind Speed for 30m Wide Foundation**



Data sourced from: DOE Partners in Technology – Passive Venting of Soil Gases Beneath Buildings – Guide for Design. Full document available as a download from the Cordek website at [www.cordek.com](http://www.cordek.com).

**Thermal Performance**

The thermal performance of the Ventform Plus panels is dependent on the depth and density of the panel type used. For design purposes e.g. U-value calculations, the minimum thickness panels can be 'simplified' so that they are considered as flat boards using the 'effective thickness' information provided in the table below.

Ventform Plus Panel Type	Overall Minimum Panel Depth (mm)	'Effective' Panel Thickness (mm)	Thermal Conductivity $\lambda_{90/90}$ (W/mK)
40 / 20	80	48	0.036
40 / 45	80	48	0.033
60 / 45	100	48	0.033
80 / 13	150	73	0.035
130 / 13	200	73	0.035

Bespoke thickness panels are available to meet your specific U-value requirements. Example U-value table below. For further assistance regarding thermal performance, including U-value calculations, contact the Cordek technical team.

Ventform Plus Panel Type	Thickness (mm) Ventform Plus				
	U-Values (W/m²K) - Examples based on a P/A Ratio of 0.70				
	0.20	0.18	0.15	0.13	0.10
40 / 20	175	200	225	275	350
40 / 45	175	175	225	250	325
60 / 45	175	200	250	275	350
80 / 13	225	250	275	300	375
130 / 13	275	300	325	350	425

**Notes:**

All floor constructions incorporating Ventform Plus Panels should be treated as suspended. Above tabulated U-values are based on a P/A of 0.70 and a 150mm reinforced concrete slab. Ventilation rate of 0.0015m³/m has been used for the example calculations. Please contact Cordek for project specific U-value calculations.

**Panel Weight Options**

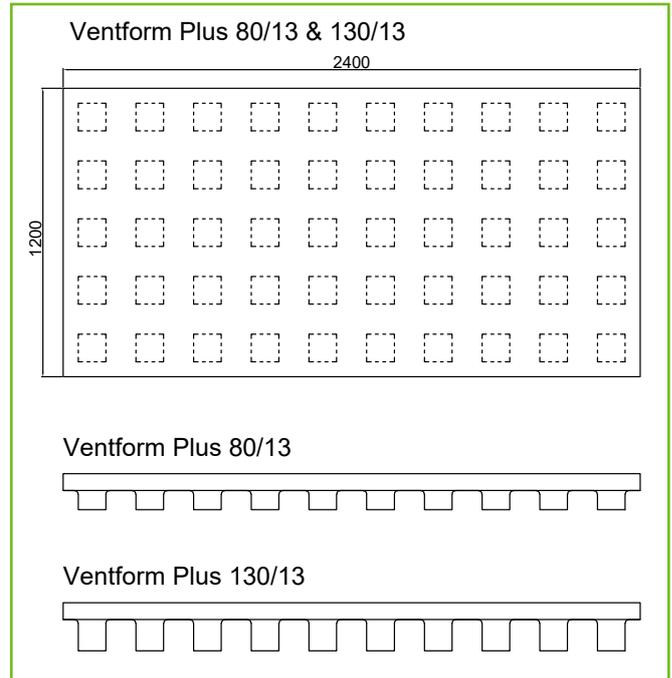
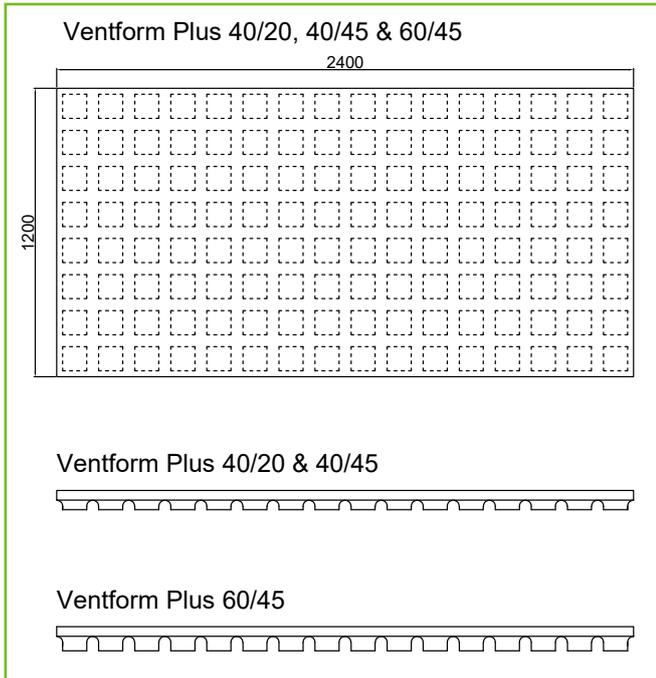
**Panel Weights**

Ventform Plus Panel Type	Panel Weights - Ventform Plus			
	2.4 x 1.2m Panel weight per thickness (mm)			
	Up to 16kg	16 - 25kg	25 - 50kg	50 - 60kg
40 / 20	80 - 275	275 - 450	450 - 600	-
40 / 45	80 - 175	175 - 250	250 - 500	500 - 600
60 / 45	100 - 175	175 - 275	275 - 525	525 - 600
80 / 13	150 - 275	275 - 400	400 - 600	-
130 / 13	175 - 300	300 - 425	425 - 600	-

Please refer to following page for options available.



Options Available



Ventform Plus 40/20 & 40/45 (40mm Leg Depth)																						
Top Thickness	40	60	85	110	135	160	185	210	235	260	285	310	335	360	385	410	435	460	485	510	535	560
O/A Thickness	80	100	125	150	175	200	225	250	275	300	325	350	375	400	425	450	475	500	525	550	575	600

Ventform Plus 60/45 (60mm Leg Depth)																						
Top Thickness	40	65	90	115	140	165	190	215	240	265	290	315	340	365	390	415	440	465	490	515	540	-
O/A Thickness	100	125	150	175	200	225	250	275	300	325	350	375	400	425	450	475	500	525	550	575	600	-

Ventform Plus 80/13 (80mm Leg Depth)																						
Top Thickness	70	95	120	145	170	195	220	245	270	295	320	345	370	395	420	445	470	495	520	-	-	-
O/A Thickness	150	175	200	225	250	275	300	325	350	375	400	425	450	475	500	525	550	575	600	-	-	-

Ventform Plus 130/13 (130mm Leg Depth)																						
Top Thickness	70	95	120	145	170	195	220	245	270	295	320	345	370	395	420	445	470	-	-	-	-	-
O/A Thickness	200	225	250	275	300	325	350	375	400	425	450	475	500	525	550	575	600	-	-	-	-	-

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DISCLAIMER: Information contained within this 'Technical Data Sheet' is for guidance only, and it is intended for experienced construction industry workers. It contains summaries of aspects of the subject matter and does not provide comprehensive statements of construction industry practice. As conditions of usage and installation are beyond our control we do not warrant performance obtained. Please contact us if you have any doubt as to the suitability of application. The information provided within this document is based on data and knowledge correct at the time of printing.

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