

ProSEP

EFICIENȚĂ și PROFESIONALISM

SIMONA



Informatii despre produs
SIMOCEL-AS

2. Product range

Extruded sheets

Thickness in mm	SIMOCEL-AS white							
	2000 x 1000 mm		2440 x 1220 mm		3050 x 1220 mm		3050 x 1500 mm	
	kg/piece	*VE	kg/piece	*VE	kg/piece	*VE	kg/piece	*VE
2	3.0	15	4.5	15	5.6	15		
3	4.5	10	6.7	10	8.4	10	10.3	10
4	6.0	7	8.9	7	11.2	7	13.7	7
5	7.5	6	11.2	6	14.0	6	17.2	6
6	9.0	5	13.4	5	16.7	5	20.6	5
8					22.3	4		

*VE = shrink wrapped packing unit

Thickness in mm	SIMOCEL-AS COLOR red, green, yellow, blue, black, grey			
	2440 x 1220 mm		3050 x 1220 mm	
	kg/piece	*VE	kg/piece	*VE
3	6.7	10	8.4	10
6	13.4	5	16.7	5

*VE = shrink wrapped packing unit

In addition to the standard white, SIMONA® SIMOCEL-AS is also available, on request, in black, green, red, blue, yellow and grey.

3. Technical information

3.1 Properties

	Test method	Dimension	SIMONA® SIMOCEL-AS
Density	DIN 53479	g/cm ³	0.75
Bending-E-modulus	DIN 53457	N/mm ²	1000
Yield stress	DIN 53455	N/mm ²	19
Elongation at yield stress	DIN 53455	%	3
Elongation at tear	DIN 53455	%	10
Impact strength	DIN 53453	kJ/m ²	11
Indentation hardness H 358/30	DIN 53456	kJ/m ²	10
Shore hardness D	DIN 53505	—	50
Vicat softening temperature A/50	DIN 53460	K (°C)	358(85)
Mean thermal longitudinal expansion coefficient	DIN 53752	K ⁻¹	0.8 · 10 ⁻⁴
Thermal conductivity*	DIN 52612	W/mK	0.087
Thermal transmission index K	—	W/m ² K	2.25
Volume resistivity Annular electrode	DIN 53482	Ohm · cm	10 ¹²
Surface resistance electrode A	DIN 53482	Ohm	≤10 ¹²
Short time welding factor	—		0.5 - 0.7
Burning behaviour***	DIN 4102	—	B 1
Water absorption	DIN 53495	%/24 h	< 0.1
Physiological safety	BGA	—	no

* Measured on test specimen 6 mm thick

** Depending on atmospheric moisture

*** Great Britain: BS 476 Part 7, Class 1 (Certificate No. C 73440/1)
France: CSTB, M1 (No. 84.21414)

The figures indicated are guide values and may vary according to the processing method and the method used to make the test specimen.

Unless specified otherwise these are average values obtained from measurements on extruded sheets 4 mm thick. These values cannot be automatically used for finished parts. The manufacturer/user should check the suitability of our materials for a specific application.

3.2 Behaviour in external use

SIMONA® SIMOCEL-AS is stabilized for external use.

SIMONA® PVC semi-finished products are stabilized and contain neither cadmium nor lead.

Effect of rear ventilation and colour in external use

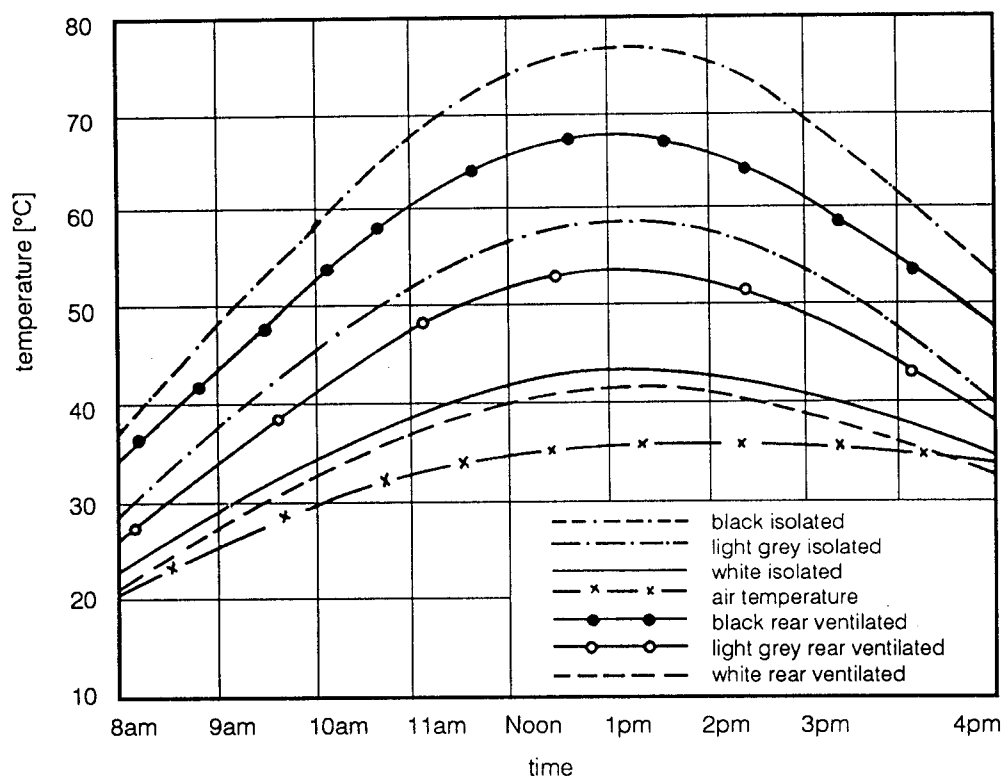
Experience has shown that external use of PVC is limited due to climatic conditions. For years PVC has been used very successfully in the Central European climatic zones north of the Alps. In Southern Climates where the sun's radiation is fundamentally more intense and where there are higher temperatures PVC cannot be recommended without reservations.

Dark colours absorb heat fundamentally more than bright ones. Even in the Central European climate sheet temperatures can be twice as high as the actual outside temperatures. For this reason dark-coloured PVC sheets should not be used externally.

For this reason a renowned raw material manufacturer has measured temperatures under sun irradiation.

Test conditions: 3 to 4 mm thick sheets, partly rear ventilated, partly isolated.
The measurements were taken on a hot day in July (temperature at 8 o'clock in the morning: 22 °C, increasing to a maximum of up to 36 °C).

As expected the isolated sheets showed a higher heat absorption than the rear ventilated ones (see diagram). The figures measured at 1.00 pm give information about the heat absorption of the individual colours.



Temperature readings of the uPVC sheets depending on colour and rear ventilation
sheet thickness 3-4 mm, sun irradiation, max. air temp. 36 °C

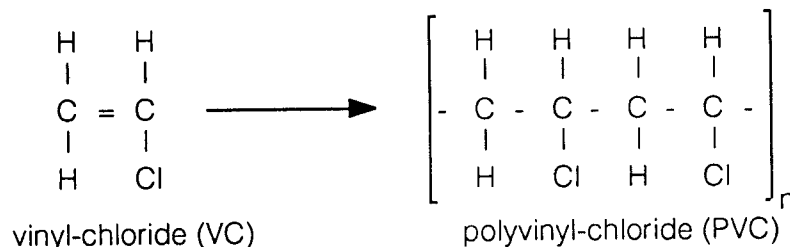
Due to reduced heat absorption the bright-coloured semi-finished products have the following advantages:

- lower sheet temperature
- smaller thermal extension
- longer life

3.3 Health aspects

PVC is a relatively „old” material. During 1912 and 1913 the German chemists Klatte and Zacharias developed a method for its polymerization. In the late 20s commercial production started. Today the monomer vinyl-chloride is produced as it was then from acetylene and hydrogen chloride as well as from ethylene and chlorine by more modern techniques based on petrochemical raw-materials.

The chain-shaped polyvinyl chloride (PVC) is produced from the colourless, gaseous vinyl-chloride (VC) by means of polymerisation (emulsion, suspension or mass polymerisation).



The above formulae show that as well as carbon and hydrogen PVC also contains chlorine (about 50 % by weight).

Burning PVC

PVC is a flame retardant material. This means that it extinguishes itself after the ignition source has been removed. In case of fire with a temperature of more than 400 °C the molecule chains split. As well as hydrogen chloride, carbon dioxide, carbon monoxide, soot, moisture and low-molecular polymers are produced, but no vinyl-chloride (VC). If PVC combustion gases are inhaled, a doctor should be contacted (see also the SIMONA safety sheet).

Processing of PVC

Under normal material conditions no damage to health whatsoever is to be expected. No particular attention need be given to any odours which occur.

The welding temperatures are not sufficient to separate hydrogen chloride from the molecule. However, if, for example, bits of PVC remain on the heating element in the case of heated tool butt welding, the seam strength can be effected and damaging gases, e.g. containing hydrogen chloride may possibly be given off. Therefore we recommend regular cleaning of the heating element.

Measurements at the working height of the welder have been carried out in order to determine the content of hydrogen chloride during the wire welding procedure. These resulted in values too low to measure at a proof limit of 1 ppm. Some of our extruder staff have been standing at the extruder and producing semi-finished products for 20 years. Up till now no illnesses have occurred which could be due to PVC. Further no criticisms have arisen as a result of regular checks carried out by the employer's liability insurance association.

PVC „saw dust“ can be thrown out into the surrounding air when cutting especially if blunt tools, with resultant high temperatures, are used. In this connection we distinguish between „less dangerous“ coarse dust and fine dust. This dust can get into the lungs with the respiratory air, where in particular the fine dust can cause illnesses of the respiratory tracts. The MAK value for dusts amounts at present to 6 mg/m³ air.

The stabilisation of polymers is economically very important as it counteracts an accelerated aging caused by different influences. In this way rigid PVC can obtain a high resistance against heat and weathering. Effective systems of stabilisation for rigid PVC are based on metal combinations. Because of our responsible attitude towards health and the environment, SIMONA AG has renounced the use of the highly-effective, but toxic cadmium and lead combinations. We are proud of having achieved similar or equally good results for resistance to heat and UV attack with the considerably less risky tin stabilisers.

Content of monomer-vinyl chloride (VC) in PVC

PVC polymerisates may contain slight residual quantities of monomeric VC, which has not been involved in the polymerisation process. However, SIMONA only uses raw materials containing no measurable level of VC. This has also been supported by extensive measurements on our premises by the trade board as well as by investigations of our raw-material suppliers which have been carried out at great expense. The measured values lie under 1 ppm, thus below the measurement limit.

MAK values

MAK means „maximum working place concentration“. The values indicate the concentration in ppm of a gas, vapour or dust which based on an 8 hour working day is not considered to damage the health of the people employed in the work area.

The MAK values are issued by the Federal Ministry for employment and social welfare in Bonn. Even if, as explained before, the generally arising VC quantities in the work area are no longer measurable, it should — as in any other area in which people are together — be ventilated from time to time (also smokers in the office, motor vehicles mechanics / exhaust gases etc.).

Generally we recommend that sufficient ventilation should be provided in work areas where plastics are processed.