



RAU-PVC 1406, 1476 EX/E
IMPACT MODIFIED POLYVINYL CHLORIDE
AV0050 EN MATERIAL DATA SHEET

Chemical structure

RAU-PVC 1406 and RAU-PVC 1476 are unplasticized, modified polyvinyl chlorides, classed as high impact resistant to DIN 7748.

Characteristic properties

RAU-PVC 1406 and RAU-PVC 1476 are distinguished by their resistance to impact even at low temperatures. The material is especially intended for outdoor use and is, therefore, to a large extent light and weather stabilized.

Thermal properties

(see also Table 1)

The performance of RAU-PVC 1406 and RAU-PVC 1476 is characteristic of a thermoplastic and is consequently dependent on temperature. Their reserves of impact resistance allow it to be used – unlike unmodified PVC – at temperatures down to – 40 °C, even if mechanical stresses are present.

With rising temperatures, the elongation at break increases, the compression strength and flexural strength decrease. Up to +40 °C the changes in mechanical values are small and can be disregarded. Between +40 °C and +60 °C, there is a slight reduction in rigidity which can only be detected using measuring and testing techniques but which must be taken into consideration in critical cases. At temperatures in excess of +60 °C, RAU-PVC 1406 and RAU-PVC 1476 should be subjected to stresses for short periods only. The softening point lies at approximately +82 °C.

Mechanical properties

(see also Table 2)

Electrical properties

(see also Table 3)

Chemical resistance

RAU-PVC 1406 and RAU-PVC 1476 are resistant to diluted and concentrated acids (excluding those with an oxidizing effect) and alkalis, mineral oils, paraffin oils, alcohols, benzene, aliphatic hydrocarbons and higher fatty acids.

Ketones, esters, chlorinated hydrocarbons, aromatic hydrocarbons, carbon disulphide and other solvents cause swelling or dissolution.

Weathering and aging resistance

The special formulation designed for outdoor use gives RAU-PVC 1406 excellent resistance to weathering and ageing. In addition to this, RAU-PVC 1476 also meets the necessary requirements for countries with high levels of solar irradiation. Even after many years' use in outdoor situations, its practical properties remain to a great extent unaltered.

Combustibility

RAU-PVC 1406 and RAU-PVC 1476 are difficult to ignite and self-extinguishing after removal of the flame.

Physiological properties

RAU-PVC 1406 and RAU-PVC 1476 are not intended for use in direct contact with foodstuffs. Please consult our Technical Applications Department in cases involving such use.

Coloring

All colors can be supplied, with the exception of transparent colors. For outdoor use, a wide range of practice-proven, extremely light-fast colors are available.

Bonding

RAU-PVC 1406 and RAU-PVC 1476 can be bonded to themselves using conventional adhesives for use with unplasticized PVC. In question involving bonding to other materials, which is possible in almost all cases, the advice of our Technical Applications Department should be obtained.

Welding

RAU-PVC 1406 and RAU-PVC 1476 can be welded to themselves without difficulty. Possible methods include hot gas, hot mirror, friction and high-frequency welding. Welding factors exceeding 0.8 can be achieved.

Application

As mentioned above, the particular characteristic of this inherently stable material is its excellent impact resistance over a wide temperature range. This property and high weathering and aging resistance combine to open up a wide field of applications for RAU-PVC 1406 and RAU-PVC 1476 e.g. in the construction industry, where it is preferred for window construction, for garden furniture and in the automotive and refrigeration industries.

Recyclability

Like all thermoplastic polymers, RAU-PVC 1406 and RAU-PVC 1476 have basic properties that make them ideal materials for recycling and making new products. Profile offcuts and waste can be collected from customers, sorted according to color and type, and then in most cases re-processed to produce new profiles.

Even old profiles that have given many years of service will retain most of their original properties, and depending, on how clean it is the material can be recycled and used to make other products requiring low-, medium- or high-grade PVC.

Table 1: Thermal properties of RAU-PVC 1406/1476

Vicat-softening point (method B)	DIN 53460	°C	82	
Thermal conductivity (20 °C)	DIN 52612	W/mK	approx. 0.21	
Coefficient of linear expansion		K ⁻¹	0.8 × 10 ⁻⁴	
Specific heat		kJ/kg × k	approx. 1.05	

Table 2: Mechanical properties of RAU-PVC 1406/1476

(if not stated otherwise, at 23 °C)

Density	DIN 53479	g/cm ³	1.44. ± 0.02	
Tensile strength	DIN 53455	N/mm ²	> 45	
Elongation at break	DIN 53455	%	> 100	
Tensile strength	DIN 53455	N/mm ²	> 40	
Flexural yield strength	DIN 53453	N/mm ²	> 85	
Impact strength	DIN 53453	kJ/m ²	no break	
		kJ/m ²	no break	
Impact strength, notched	DIN 53453	kJ/m ²	> 25	
Ball indentation hardness 30 sec	DIN 53456	N/mm ²	approx. 95	
Modulus of elasticity	DIN 53457	N/mm ²	> 2,500	
Shore hardness D	DIN 53505	–	81 ± 3	

Table 3: Electrical properties of RAU-PVC 1406/1476

Volume resistivity	DIN 53482	Ω × cm	> 10 ¹⁶	
Surface resistance	DIN 53482	Ω	> 4 × 10 ¹¹	
Dielectric constant			50 Hz	3.4
			800 Hz	3.4
			up to 1 million Hz	2.9
Dissipation factor	DIN 53483		50 Hz	0.016
			800 to 1 million Hz	0.024
Dielectric strength	DIN 53481	kV/mm	> 30	

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