

What is PVC-CAW EN

PVC-CAW

PVC-CAW – rigid PVC (PVC-U), flame-retardant, excellent chemical resistance

PVC-CAW is a rigid PVC (unplasticised PVC, PVC-U) – an amorphous engineering thermoplastic valued above all for its excellent chemical resistance and its flame-retardant behaviour (UL 94 V-0, DIN 4102 B1). The grey-coloured material is stiff, strong and economical and is the standard material for chemical apparatus and tank construction, electroplating and ventilation. Its service temperature is limited to about 0 to +60 °C.

Classification and basic character

PVC-CAW consists of polyvinyl chloride (PVC-U) without plasticisers, stabilised for technical applications. As an amorphous thermoplastic, PVC has no defined melting point; it softens above the glass transition temperature (around 80 °C). Its hallmarks are high rigidity (tensile modulus around 3,300 MPa), good strength (yield stress 58 MPa) and very good resistance to acids, alkalis and salt solutions. The standard colour is dark grey.

Chemical resistance and fire behaviour

The two outstanding features of PVC-CAW are its chemical resistance and its flame-retardant behaviour. PVC-U withstands many acids, alkalis, salt solutions and aqueous media and is therefore the classic material for chemical tanks, scrubbers and electroplating baths. At the same time the material is flame-retardant (UL 94 V-0, DIN 4102 B1, oxygen index around 42 %) and self-extinguishing – because of its chlorine content it does not continue to burn on its own.

How PVC-CAW is processed

PVC-CAW is supplied as sheet, rod or tube. From this semi-finished product we machine parts – sawing, milling, turning and drilling give clean results; it is important not to overheat the cutting zone, as PVC otherwise decomposes releasing hydrogen chloride. PVC-CAW is also very easy to thermoform and weld (hot-gas and hot-plate welding) – the basis for tank and apparatus construction.

Mechanical, thermal and electrical properties

PVC-CAW reaches a yield stress of 58 MPa with a tensile modulus of around 3,300 MPa and a density of 1.44 g/cm³. The notched impact strength is low at around 4 kJ/m² – PVC-U is rather brittle than tough. The Vicat softening temperature is 74 °C, the service temperature 0 to +60 °C. Electrically the material is a good insulator (dielectric strength 39 kV/mm).

When PVC-CAW is the right choice

PVC-CAW is worthwhile whenever chemical resistance and fire protection must be combined economically – for example:

- Chemical apparatus, tank and pipework construction
- Electroplating and pickling plants, surface technology
- Ventilation and exhaust-air ducts (flame-retardant)
- Water treatment and waste-water technology
- Insulating and structural parts with fire-protection requirements

When PVC-CAW is NOT the right choice

Equally important are the limits of the material:

- Food or drinking-water contact (technical grade, not approved)
- Continuous use above about 60 °C (the material softens)
- Use below 0 °C or high impact loading (PVC-U is brittle)
- Contact with solvents such as esters, ketones, chlorinated hydrocarbons (swelling/attack)
- Applications with high continuous temperature – then PVDF, PP or PE

What does PVC-CAW cost?

PVC-CAW is one of the most economical engineering plastics and is priced well below high-performance and fluoropolymers. The part price is mainly determined by semi-finished shape (sheet, rod, tube), dimension, material utilisation (offcut), machining or welding effort and lot size. We are happy to quote binding prices on request based on your drawing.

Processing at Liedtke

PVC-CAW machines well – sawing, milling, turning and drilling give clean, dimensionally accurate results; we use sharp tools and keep the cutting zone cool to avoid thermal decomposition. We also offer cold-bending, thermoforming and plastic welding – this is how we produce chemically resistant tank, apparatus and structural parts from single pieces to series production.

Advantages and disadvantages at a glance

An honest assessment – and how the disadvantages can be mitigated in practice:

Advantages

- Very good chemical resistance (acids, alkalis, salts)
- Flame-retardant and self-extinguishing (UL 94 V-0, DIN 4102 B1)
- High rigidity and strength
- Readily weldable and thermoformable (tank construction)
- Economical and widely available

Disadvantages

- Not for food/drinking-water contact (technical grade)
- Limited service temperature (0 ... +60 °C)
- Brittleness / low impact strength, especially in the cold
- Sensitive to certain solvents (esters, ketones)
- HCl formation on overheating/fire

Practical tip: PVC-CAW is the right choice when chemical resistance, weldability and fire protection are required economically – for example in tank and apparatus construction or electroplating. If higher temperatures, drinking-water/food contact or high impact strength are required, PP, PE-HD or PVDF are the better choice.

Typical properties

- Very good chemical resistance
- Flame-retardant (UL 94 V-0, DIN 4102 B1)
- High rigidity and strength
- Readily weldable and thermoformable
- Good electrical insulator
- Low water absorption
- Economical, colour dark grey
- Technical grade (not for food contact)

Product examples

- Chemical tanks, troughs and scrubbers
- Electroplating and pickling plants
- Ventilation and exhaust-air ducts
- Pipework and apparatus parts
- Insulating and structural parts
- Covers and protective housings

Typical industries

- Chemical apparatus and tank construction
- Electroplating and surface technology
- Ventilation and exhaust-air technology
- Water treatment and waste-water technology
- Mechanical and plant engineering
- Electrical and insulation technology

	Test method	Unit	Value
Mechanical Properties			
Yield stress	DIN EN ISO 527	MPa	58
Tensile modulus	DIN EN ISO 527	MPa	3300
Notched impact strength (Charpy)	DIN EN ISO 179-1eA	kJ / m ²	4
Shore D hardness	DIN EN ISO 868		82
Thermal / Fire behaviour			
Vicat B/50	DIN EN ISO 306	°C	74
Service temperature		°C	0 ... +60
Flammability	UL 94		V-0
Building material class	DIN 4102		B1
General Properties			
Density	DIN EN ISO 1183	g / cm ³	1.44
Dielectric strength	DIN IEC 60243-1	kV / mm	39
Colour			dark grey

PVC-CAW is a flame-retardant rigid PVC (PVC-U). The values stated are typical characteristic values; they serve as an aid to material selection and are not a legally binding warranty of specific properties. PVC-CAW is a technical grade and not intended for food or drinking-water contact. The service temperature is limited (0 ... +60 °C); media resistance depends on temperature and concentration and must be verified case by case.