

NUMBER 4849

## PVP K-90 polymer

*PVP K-90 polymer*

### Description

PVP (Polyvinylpyrrolidone) K-90 polymer is a hygroscopic, amorphous polymer. It is a linear nonionic polymer that is soluble in water and organic solvents and is pH stable. It forms hard glossy transparent films and have adhesive and cohesive properties. *Ashland Specialty Ingredients has the capability to dial the K-value to meet specific customer needs.*

### Key Attributes

- Polyvinylpyrrolidone (PVP) can be plasticized with water and most common organic plasticizers. It is considered to be physiologically inert. Applications take advantage of one or more properties inherent in the polymer, typically due to the pyrrolidone ring.
- High polarity and the resultant propensity to form complexes with hydrogen donors, such as phenols and carboxylic acids, as well as anionic dyes and inorganic salts.
- Dispersancy, where components in a mixture are uniformly distributed through the use of polyvinylpyrrolidone.
- Hydrophilicity, where the water solubility of PVP is its dominant feature and frequently a factor along with other properties valuable in numerous applications.
- Adhesion, taking advantage of the higher molecular weight PVP formulating in aqueous media, then evaporating sufficient water to generate a solid product for the desired application.
- Cohesivity, where cohesive strength is achieved through a variety of dry blending and granulation techniques.

### Applications and Usage Notes

- **Adhesives** – pressure-sensitive and water-remoistenable types, food packaging (indirect food contact), metal adhesives, abrasives, sandcore binder, rubber to metal adhesives and glue sticks.
- **Ceramics** – binder in high temperature fire-prepared products such as clay, pottery, porcelain, brick product, dispersant for ceramic media slurries and viscosity modifier.
- **Coatings/Inks** – digital printing coating, ball-point inks, protective colloid and leveling agent for emulsion polymers/ coatings/ printing inks, pigment dispersant, water colors for commercial art, temporary protective coatings, paper coatings, waxes and polishes.
- **Electronic Applications** – storage batteries, printed circuits, cathode ray tubes, binder for metal salts or amalgams in batteries, gold, nickel, copper and zinc plating, a thickener for solar gel ponds and as an adhesive to prevent leakage of batteries, serves as an expander in cadmium-type electrodes, binder in sintered-nickel powder plates.
- **Membranes** – macroporous, multiporous, desalination, gas separating, liquid ultrafiltration, hemodialysis, selective permeability types of membranes, hollow fiber membranes.
- **Metallurgy** – processing for both ferrous and non-ferrous metals, coating ingredient to aid or remove material from metal surfaces such as copper, nickel, zinc and aluminum, used in metal quenchant baths.
- **Paper** – cellulose papers, rag stock, rag stripping, copying paper, printing paper and electric insulating papers, paper adhesives.
- **Polymerizations** – acrylic monomers, unsaturated polyesters, olefins, including PVC, polystyrene beads, substrate for graft polymerization, template in acrylic polymerization.

## Typical Product Properties

Property	PVP K-90 polymer	
	Appearance @ 25°C	Yellow viscous, aqueous solution
K-Value (Viscosity of 1% solution)	80-100	90-100
Color (APHA)	40 max.	60 max.
% Active	20-24	95 min.
% Moisture	-	5 max.
% Aqueous	76-80%	-
% Ash (combustion)	0.016	-
pH (5% aqueous solution)	4-9	3-7
Brookfield Viscosity, cps (5% solids @ 25°C)	150	
Brookfield Viscosity, cps- as is @ 25°C	29,000-62,000	-
Specific Gravity @ 25°C	1.051	-
Bulk Density (g/cc)	-	0.3-0.4
Film Density (g/cc)	1.216	-
Freezing Point °C	-0.9	-
Specific Heat (cal/g/KC)	0.827	-
Molecular weight (g/mol)	1,000,000 – 1,700,000	
TG (°C)	174	

## Packaging Information

Product	Physical Form	Pkg Type	Net Wgt (lbs)	Net Wgt (kgs)
PVP K-90	Powder	Fiber Drum	100 lbs	45.3 kgs
PVP K-90 10% Solution	Liquid	HDPE IBC	2250 lbs	1020.6 kgs
PVP K-90 15% Solution	Liquid	HDPE IBC	2250 lbs	1020.6 kgs
PVP K-90 Solution	Liquid	HDPE Drum	450 lbs	204.1 kgs
PVP K-90 Solution	Liquid	HDPE IBC	2250 lbs	1020.6 kgs

## Product Safety Information

For health and safety data and handling, storage and disposal procedures, please refer to the Safety Data Sheet (SDS) and product label.

To learn more, visit [ashland.com](http://ashland.com)

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