

NUMBER 4846

PVP K-15 polymer

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Description

PVP (Polyvinylpyrrolidone) K-15 polymer is a hygroscopic, amorphous polymer. It is a linear nonionic polymer that is soluble in water and organic solvents, and pH stable. It forms hard glossy transparent films and has adhesive and cohesive properties.

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 to numerous applications.
- Cohesivity, where cohesive strength is achieved through a variety of dry blending and granulation techniques.
- PVP is cross-linkable to a water insoluble, swellable material either in the course of vinylpyrrolidone polymerization, by addition of an appropriate multifunctional comonomer or by post-reaction, typically through hydrogen abstraction chemistry.

Applications and Usage Notes

- **Ceramics** – binder in high temperature fire prepared products such as clay, pottery, porcelain, brick product, dispersant for ceramic media slurries and viscosity modifier.
- **Glass and Glass Fibers** – acts as a binder, lubricant and coating agent.
- **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, and chemical-mechanical planarization media.
- **Lithography and Photography** – foil emulsions, etch coatings, plate storage, gumming of lithographic plates, dampener roll solutions, photo and laser imaging processes, microencapsulation, thermal recording, carrier, finisher preserver of lithographic plates, thermal transfer recording ribbons and optical recording discs.
- **Fibers and Textiles** – synthetic fibers, dyeing and printing, fugitive tinting, widely used as dye dispersant and to disperse titanium dioxide, scouring, delustering, sizing and finishing, grease-proofing aid, soil release agent.
- **Paper** – inorganic papers, cellulose papers, rag stock, rag stripping, coloring and beating operations, copying paper, printing paper and electric insulating papers, paper adhesives.



Typical Product Properties

Property	PVP K-15 polymer	
	Appearance @ 25°C	Pale yellow aqueous solution
K-Value (Viscosity of 1% solution)	13-19	13-19
Color (APHA)	4 max. (VCS)	100 max.
% Active	28-32	95 min.
% Moisture	-	5 max.
% Aqueous	68-72%	-
% Ash (combustion)	0.012	5 max.
pH (5% aqueous solution)	6-9	3-7
Brookfield Viscosity, cps (5% solids @ 25°C)	1	
Brookfield Viscosity – as is @ 25°C	10-15	-
Specific Gravity @ 25°C	1.061	-
Bulk Density (g/cc)	-	0.6-0.7
Film Density (g/cc)	1.203	-
Freezing Point °C	-4.1	-
Specific Heat (cal/g/KC)	0.819	-
Molecular weight (g/mol)	6,000 – 15,000	
Tg (°C)	130	

Packaging Information

Product	Physical Form	Pkg Type	Net Wgt (lbs)	Net Wgt (kgs)
PVP K-15	Powder	Fiber Drum	125 lbs	56.7 kgs
PVP K-15 Solution	Liquid	HDPE Drum	450 lbs	204.1 kgs
PVP K-15 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

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