

STARIND PVP

Proven Excellence for Water Treatment Membranes



Reliable
Cost-Effective
Consistent
Easy to Use



Why Choose STARIND PVP for Your Membranes

STARIND PVP allows high-quality pore controlling, comparable to market leaders, resulting in improved supply chain security.

Manufactured in our GMP- and HACCP-certified facility in Chongqing, China, STARIND PVP ensures consistent quality and high-volume production to meet global demand.

Optimized for efficiency, STARIND PVP offers a cost-effective solution, making it an ideal choice for membrane producers.

Supported by our JV partner JRS Rettenmaier & Söhne, Germany and in cooperation with Chongqing University,

we deliver top-tier quality driven by international and domestic expertise, advanced R&D, and first-class service.

STARIND PVP is backed by comprehensive regulatory documentation and certifications, simplifying supplier qualification and ensuring compliance with international standards.

STARIND PVP for consistent, high-quality membrane performance.

What is Special about STARIND PVP?

STARIND PVP is produced from highly pure NVP, featuring minimal impurities and an almost odorless profile. With comprehensive knowledge and control over the raw material, production process, and equipment we offer three standard grades, distinguished primarily by

molecular weight, which impacts viscosity, and pore formation.

However, production of STARIND PVP with a tailored K-value profile is possible upon request.



SSP Production Site, Chongqing, China

GMP/HACCP Certified
Manufacturing Standard

Why is STARIND PVP Used by the Membrane Industry?

STARIND PVP is versatile, very consistent from batch to batch, and designed to meet the stringent needs of the membrane industry. It is commonly used as an additive in the production of hollow fiber membranes, and it plays an essential role in enhancing membrane performance and structure.

STARIND PVP is compatible with polyether-sulfone, polyvinylidene fluoride. With a re-evaluation period of 36 months, the low viscous

grades such as STARIND K25P and K30P are robust when stored under ambient conditions in closed containers.

STARIND PVP is designed to enhance the performance and durability of membranes. It stands out as a premier choice for developers aiming to achieve optimal results. By incorporating STARIND PVP, membrane efficiency is improved, making it particularly suitable for drinking water treatment and industrial applications like wastewater treatment.

Proven Performance

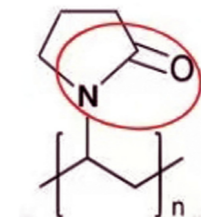
STARIND PVP has a long history of successful applications in membrane technology, demonstrating consistent performance in various settings. Its reliability and effectiveness make it a trusted choice for membrane developers seeking quality and performance.

Conclusion

By choosing STARIND PVP as a pore former, membrane developers can leverage its unique advantages to create high-performing, reliable membranes. Unlock the full potential of your membrane technology with STARIND PVP and stay ahead in the competitive landscape.

STARIND PVP - Versatile Hydrophilic Pore Controller

PVP by nature shows a hydrophilic characteristic. The hydration capacity is driven by its molecular structure. The lactam group enables hydrogen bonding with water molecules, providing it with distinct hydration advantages for applications in water treatment membranes, where effective moisture retention and stability are essential.



Benefits of STARIND PVP

Overall, the hydration capacity of STARIND PVP supports the consistent and reliable performance of water treatment membranes, which is essential in applications that demand continuous and efficient water purification. STARIND PVP K Grades enable:

Enhanced Filtration Efficiency

The ability of STARIND PVP to retain moisture helps maintain the membrane's porosity and flexibility, allowing for effective filtration by keeping the pores open and functional.

Improved Hydrophilicity

STARIND PVP's hydrophilic nature makes membranes more compatible with water, promoting smooth water flow and reducing fouling (blockages due to accumulated

particles). This enhances the membrane's performance over time, as it resists clogging and maintains high filtration rates.

Structural Stability

By interacting with water, STARIND PVP helps membranes remain stable and less prone to shrinkage or deformation, which is essential in prolonged water filtration processes. A stable structure extends the membrane's lifespan and maintains filtration quality.

Increased Durability and Cost-Effectiveness

Effective hydration helps prevent wear and tear, making membranes more durable and reducing the need for frequent replacement, which can be cost-effective in industrial applications.

STARIND PVP Unlocks the Potential of Membrane Technology

Hydrophilicity

STARIND's hydrophilic properties ensure enhanced water permeability, leading to improved filtration efficiency and reduced fouling rates. This results in longer operational lifespans for membranes and reduced maintenance needs.

Versatile Pore Size Control

STARIND PVPs allow precise control over pore size and distribution during membrane fabrication. This versatility enables developers to tailor membranes to specific applications, whether for microfiltration, ultrafiltration, or beyond.

Excellent Compatibility

With a wide range of polymer compatibility, STARIND PVP can be seamlessly integrated into various membrane

materials. This ensures consistent performance across different formulations, making it a reliable choice for diverse applications.

Ease of Processing

The processing characteristics of STARIND PVP facilitate straightforward incorporation into membrane manufacturing processes. Its favorable solubility and thermal stability allow for efficient production and uniform pore formation.

Low Toxicity and Biocompatibility

SSP's PVPs are known for its low toxicity, making it suitable for applications in medical care and water treatment. This safety profile ensures compliance with regulatory standards and enhances the overall appeal of the final product.

STARIND PVP K Series – When to Use What?

STARIND PVP is offered in low and high viscosity grades. Tailor-made production is possible as well. For applications where high water flux and efficient filtration are critical (e.g. ultrafiltration) STARIND K25P or STARIND K30P are usually the better choice due to the lower viscosity and ability to promote high permeability.

For specialized applications requiring tight filtration of very small particles, such as reverse osmosis or when higher mechanical strength is needed STARIND K90P may be more suitable due to its higher viscosity and denser membrane structure.

PVP K Grades	STARIND K25P and K30P	STARIND K90P
Molecular Weight	Low	High
Viscosity in Solution	Less	Higher
Pore Size Creation	Fine Pores	May contribute to thicker denser membrane layers.
Filtration	Enhanced water permeability and improved filtration efficiency.	Lower permeability to water but better selectively in filtering out smaller contaminants.
Ease of Use	Easier to handle during membrane manufacturing, especially for thin, porous layers.	Improved mechanical membrane strength.
Applications	Favored for high water flux, e.g. microfiltration and ultrafiltration.	· Where finer filtration of smaller particles is required: Nanofiltration or reverse osmosis. · For heavy duty applications.

What Characterizes STARIND PVP?

CAS No.: 9003-39-8

Synonyms: Polyvinylpyrrolidone, Povidone

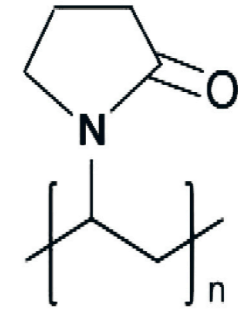
Molecular Formula: (C₆H₉NO)_n

HS Code: 390599

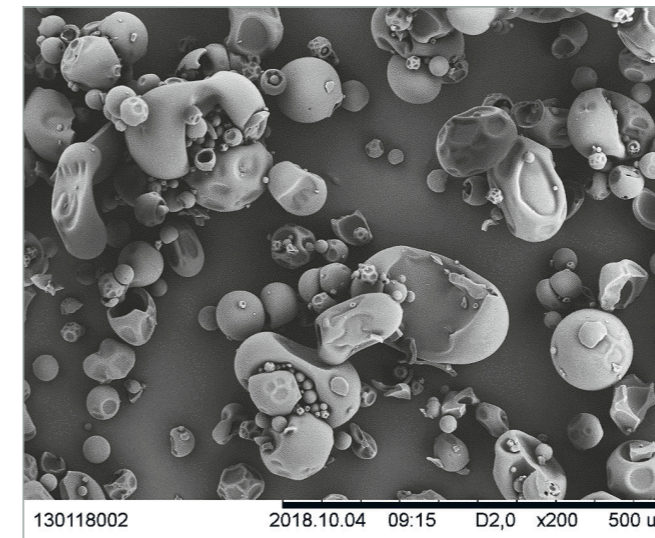
STARIND PVP is recognized as 'Generally Recognized as Safe' (GRAS) by the U.S. FDA and complies with E1201 standards.

STARIND PVP does not contain Nanoparticles / Nanomaterial (EU) No 2015/2283.

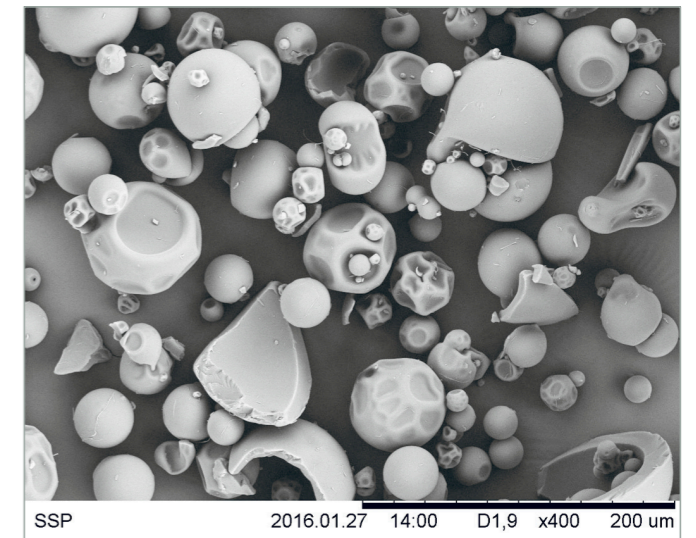
Our PVP products are widely accepted as excipients in the pharmaceutical industry and are successfully utilized by leading global producers of dialysis membranes.



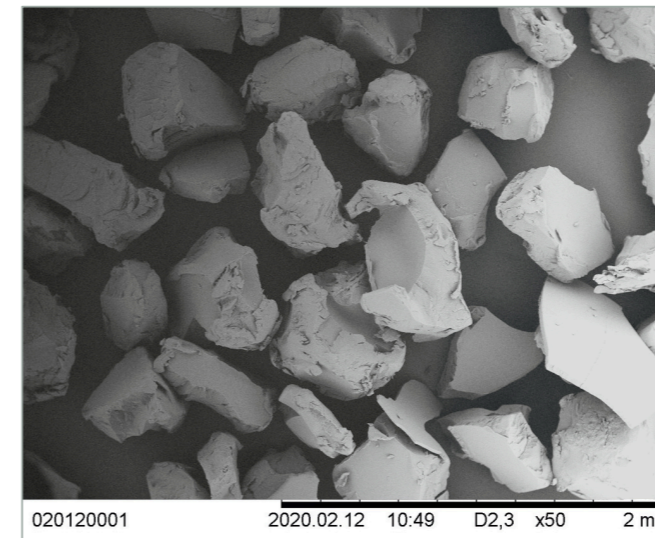
Structure Formula Polyvinylpyrrolidone



SEM of STARIND K25P



SEM of STARIND K30P



SEM of STARIND K90P

Physical and Chemical Properties

Characteristics	Specification (SSP Method)
Physical State	Powder
Color	White
Odor	No smell or slightly characteristic odor
Solids Content, %	95.0 ~ 100.0
pH	3.0 ~ 7.0

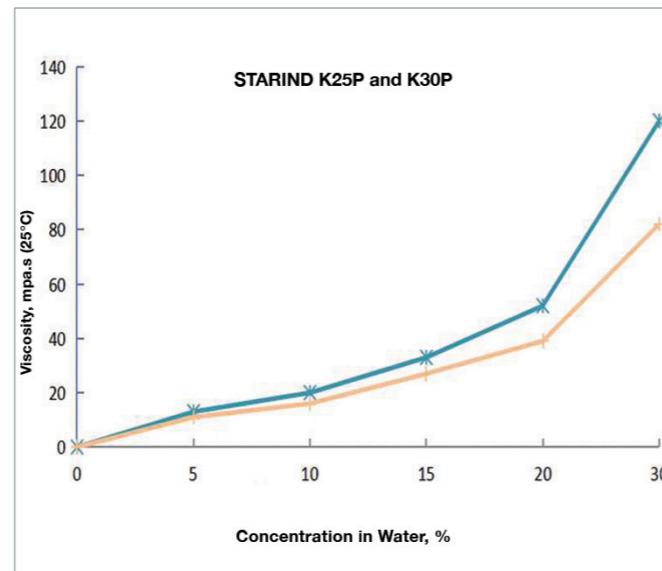
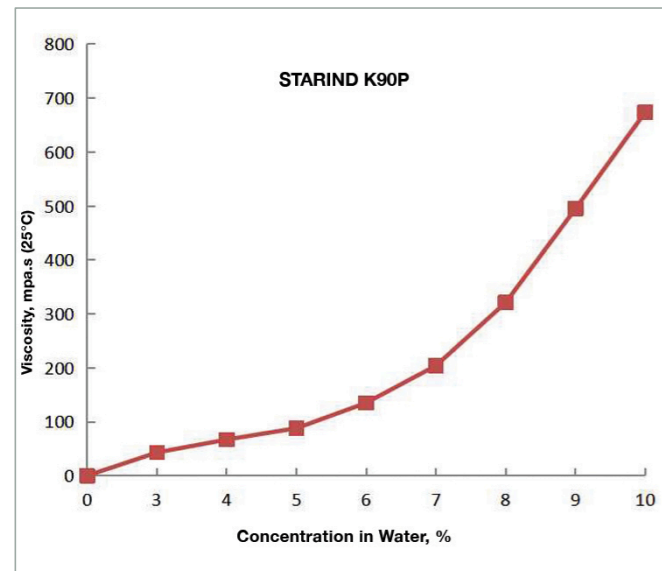
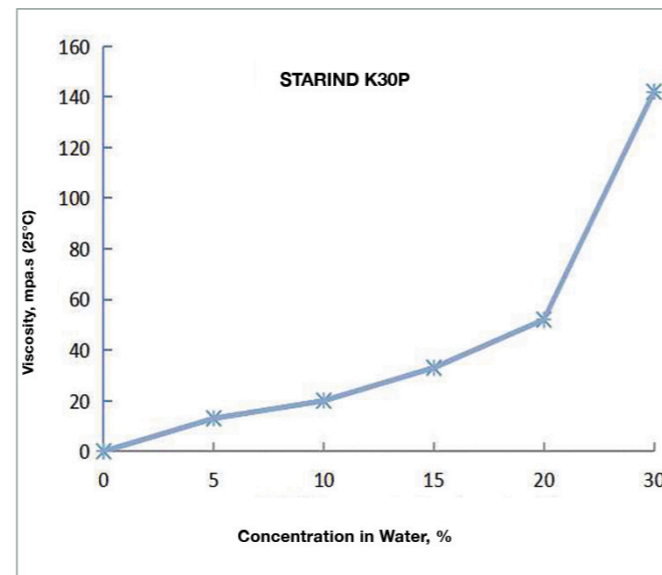
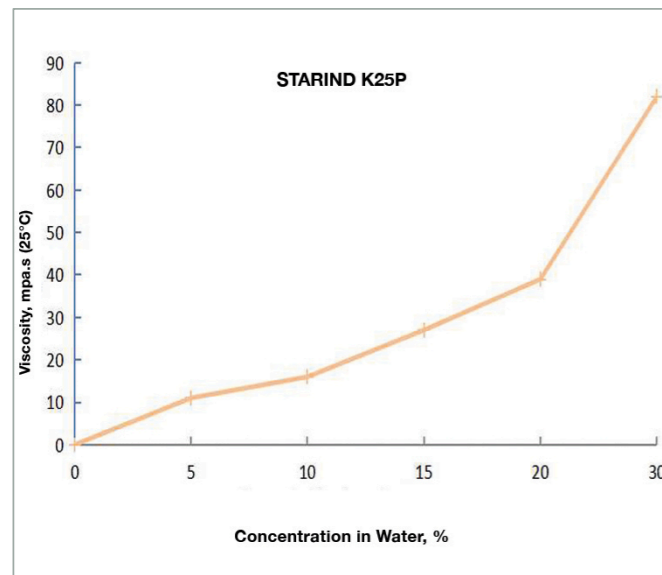
What is the Difference between the PVP K Grades?

K-value and NVP Specification

One of the main differences between STARIND Grades is the higher molecular weight of STARIND K90P, which results in a higher K-value indicating greater viscosity. While the viscosity of STARIND K25P and K30P remains stable over time, STARIND K90P exhibits a typical initial K-value drop in the first three months, a common occurrence for high-viscosity PVPs. Further details are available in the Stability Report.

SSP Method	K-value	NVP ppm
STARIND K25P	24,0 - 27,0	< 100
STARIND K30P	27,0 - 33,0	< 100
STARIND K90P	86,0 - 98,0	< 1.000

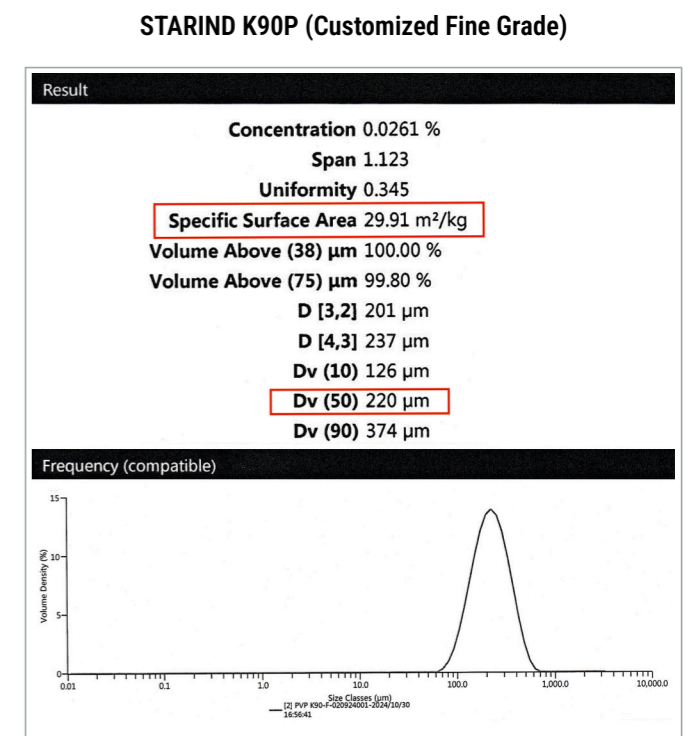
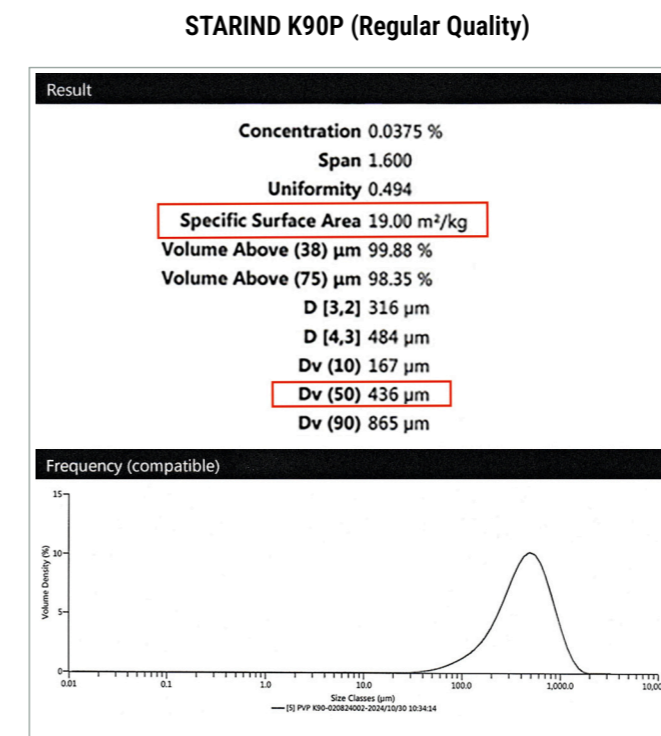
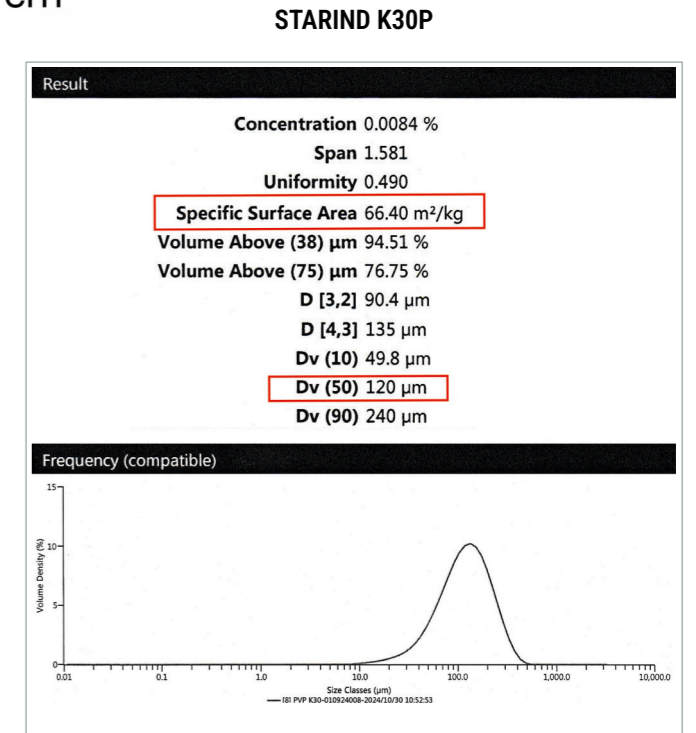
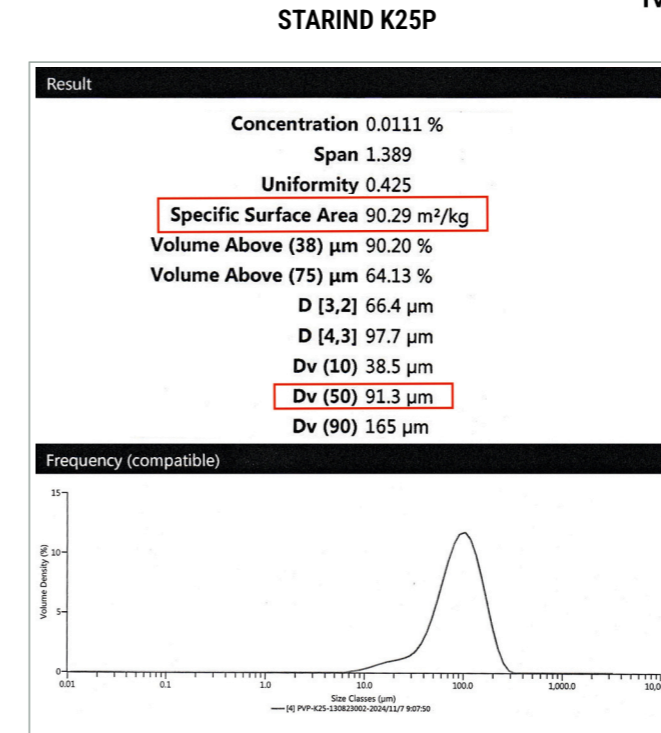
Viscosity in Water



Particle Size Distribution (PSD) and BET

The quality of STARIND PVP is very consistent from batch to batch due to its synthetic nature and a validated production process.

STARIND K Grades exhibit a highly homogeneous, particle size distribution (PSD), ensuring consistent quality and performance in applications.



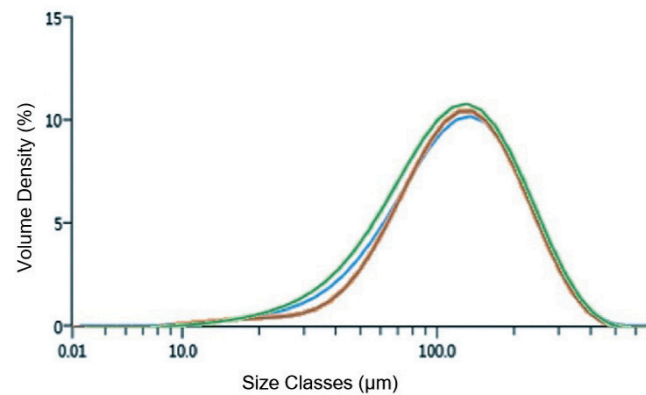
Customized Production for special or narrower PSD and K-value (viscosity) possible upon customer request.

STARIND PVPs Compared to Other Products in the Market

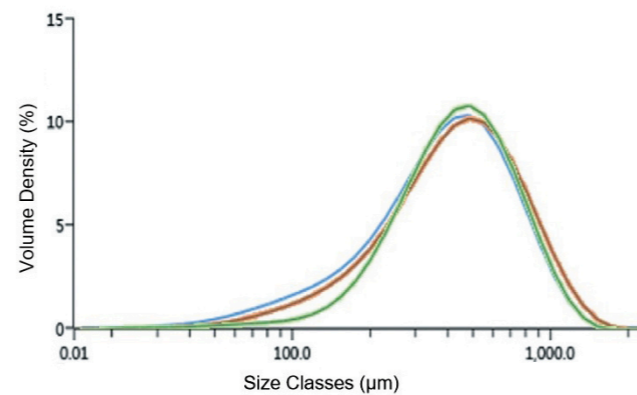
PSD and Surface Area of STARIND K Grades Compared to Other Products in the Market				
Product	Sample No	Specific Surface Area Malvern m ² /kg	DV (50) μ Batch Result Malvern	DV (90) μ Batch Result Malvern
STARIND K25P	130823001	85,81	94,10	167,00
STARIND K25P	130823002	90,29	91,30	165,00
STARIND K25P	130823003	90,27	89,10	162,00
STARIND K30P	010924008	66,40	120,00	240,00
STARIND K30P	010924009	65,52	119,00	231,00
STARIND K30P	010924010	77,45	105,00	216,00
Competitor A		96,23	94,40	212,00
Competitor B		78,53	105,00	189,00
STARIND K90P	020824001	21,33	403,00	787,00
STARIND K90P	020824002	19,00	436,00	865,00
STARIND K90P	020824002	18,10	440,00	819,00
Competitor A		26,34	348,00	925,00
STARIND K90P Fine Grade		29,91	220,00	374,00
Competitor B		39,13	211,00	488,00

Batch to Batch Consistency Data

STARIND K30P and STARIND K90P ensure high batch-to-batch consistency, supporting uniform membrane pores and reliable filtration results.



PSD of 3 Batches STARIND K30P



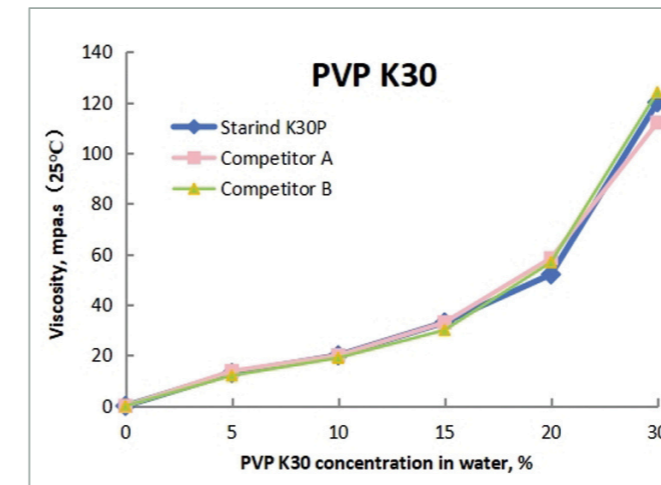
PSD of 3 Batches STARIND K90P

Molecular Weight Distribution

STARIND PVP Grades Compared to other Products in the Market				
Product	Mn (g/mol)	Mw (g/mol)	Mv (g/mol)	Polydispersity* PD
STARIND K25P-1	24277	42151	61078	1,736
STARIND K25P-2	24396	42645	62205	1.748
STARIND K25P-3	24970	43059	62727	1.724
STARIND K30P-1	37377	65726	95263	1,758
STARIND K30P-2	36735	63333	90576	1,724
STARIND K30P-3	37591	63349	89968	1,685
K30 of Competitor A	35890	64908	95908	1,809
K30 of Competitor B	35985	62668	89574	1,742
STARIND K90P-1	324349	1112300	2356545	3,429
STARIND K90P-2	300750	999797	2086735	3,324
STARIND K90P-3	306451	1015636	2105678	3,312
K90 of Competitor A	221752	807718	1696885	3,642
K90 of Competitor B	235821	843551	1718504	3,577
	Mn = number-average molecular weight Mw = weight-average molecular weight		Mv = viscosity-average molecular weight PD = Mw/Mn	

* With an exceptionally low PB value, STARIND K 30P and K90P indicate a remarkably narrow molecular weight distribution, allowing for precise and uniform pore formation in membrane applications. This distinctive characteristic enhances filtration efficiency and consistency, setting STARIND apart from other products on the market.

Viscosity in Water



A comparison of K90 grades was not conducted. Given the significant initial viscosity drop within the first three months, which is inherent to molecular weight grades, any results would lack reliability.

Applications

The dosage of PVP in membrane manufacturing depends on several factors, including the type of membrane, membrane material, desired properties (e.g., pore size, hydrophilicity, mechanical stability), and the filtration process (ultrafiltration, microfiltration, reverse osmosis,

etc.). Here are general guidelines for PVP dosing across different membrane types: The low viscous grade **STARIND K30P** is ideal for Ultrafiltration while the higher viscous grade **K90P** seems to be preferred by the industry for Reverse Osmosis Applications.

Membrane Type	Typical Membrane Material	PVP Dosage (wt%)	Purpose
Ultrafiltration Membranes (UF)	Polyethersulfone (PES), Polyvinylidene Fluoride (PVDF)	5 - 15	PVP increases hydrophilicity and ensures uniform pore structure. Higher concentrations of PVP improves pore formation but may increase solubility in water, needing controlled production.
Microfiltration Membranes (MF)	PES, PVDF, Cellulose Acetate	3 - 10	PVP acts as a pore former and enhances hydrophilicity. Lower PVP dosage is used compared to UF membranes due to less stringent pore size requirements.
Reverse Osmosis Membranes (RO)	Polyamide (PA), Cellulose Acetate (CA), PES	1 - 5	PVP enhances hydrophilicity and reduces fouling. Used in lower doses due to dense structure requirements; excessive PVP may affect membrane density.
Nanofiltration Membranes (NF)	PES, PA	2 - 8	PVP improves wettability and stabilizes pore structure. Dosage is typically higher than RO for intermediate selectivity requirements.
Hollow Fiber Membranes (Various)	PES, PVDF	5 - 15	PVP supports hollow fiber structure and increases hydrophilicity in ultrafiltration or microfiltration applications. Dosage depends on application pressure, such as low or high pressure for RO.

STARIND K Grades Standard Packaging and Container Loading Capacity

Round Fiber Drums with Double PE liner	
kg/Single Drum	25
No Drums/Pallet	27
kg/Pallet (Single Stack)	675
Pallets/20 ft. Cont.	10
Weight/20 ft. Cont.	6.750
Pallets/40 ft. Cont.	20
Weight/40 ft. Cont.	13.500

You can find the Shipping & Packaging Guide at <https://pvp-chem-agency.com/ra-qm>

Re-evaluation recommended after 36 months. Short and long term stability data available upon request. <https://pvp-chem-agency.com/contact>

Star-Tech & JRS Specialty Products Co.,Ltd. (SSP)

SSP 斯泰克

Sino-German Joint-Venture, Chongqing, China

SSP is a Sino-German Joint Venture dedicated to producing top-tier Povidones (PVPs) under audited and certified GMP and HACCP conditions. Situated in the National Economic and Technological Development Zone of Chongqing, China, SSP benefits from excellent infrastructure and an efficient, sustainable production environment, allowing for the cost-effective production of outstanding PVP quality.

Currently, SSP's high-quality Povidones are trusted by leading multinational companies in the pharmaceutical and medical sectors, serving as essential components in tablet formulations and as pore-regulating aids in dialysis membranes. Looking forward, SSP is committed to broadening its reach into the global Beverage and Water Treatment markets.

We are proud that renowned global companies already rely on our Polyvinylpyrrolidone for enhanced membrane performance and reliable supply chain security.

A pre-audit questionnaire and comprehensive regulatory information are available upon request. In addition, we are happy to welcome you for a visit at our plant.

<https://pvp-chem-agency.com/contact>



SSP Headquarters in Chongqing

SSP's strengths include production excellence, cost-effectiveness, outstanding regulatory documentation, and exceptional customer service, including direct customer management for key accounts.

Website: chinassp.net/en/

Facts and Figures of SSP	
Origin of SSP	2012
HQ and Production	Chongqing, China
JV Founded in 2016	Sino-German Joint Venture with the family owned JRS Group
Specialty	Premier PVP product lines, PVP-K, PVPP, PVP/VA
Capacity	5,000 metric tons annually
Certifications	ISO 9001, ISO 14001, ISO 45001, ISO 22000, EXCiPACT GMP (SGS), US DMF, CEP edQm, Kosher, Halal, U.S. FDA and U.S. FDA UFI (DUNS) registered
Applications	Pharmaceuticals, Medical Care, Filtration, Home and Personal Care, Glue Sticks ...
Current Core Market	95% Health Care Industry
Presence	Worldwide
Export Rate	65 %



Aerial View of SSP



Link to SSP

Your Contact:

Manufacturing Site:

SSP 斯泰克

Star-Tech & JRS Specialty Products Co., Ltd.

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China

<http://chinassp.net/en/>

SSP Global Agent (excluding China):



PVP CHEM AGENCY INTERNATIONAL GmbH

Managing Director: Yvonne M. Johnson
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73494 Rosenberg
Germany

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Disclaimer:

SSP recommends that customers independently test and evaluate their products and processes to determine the effectiveness of SSP products in their specific applications.