

**Kollidon® – The Original**  
Setting new standards in stability,  
purity and patient safety.

Now with  
new PeroXeal™  
packaging

Bernhard Fussnegger,  
an enabler in excipients

 **BASF**  
The Chemical Company

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Custom Synthesis | Excipients | Active Ingredients

## Kollidon<sup>®</sup>: a versatile excipient with a rich tradition.



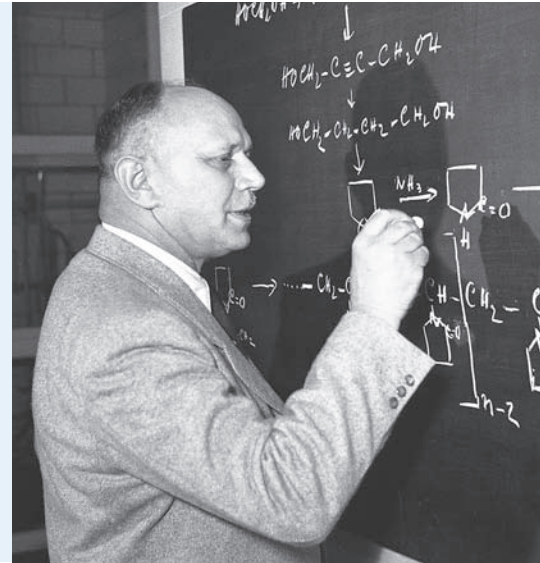
**“I’ll be the first to admit it: I’m a perfectionist. So for me, producing best-in-class PVP is simply not enough. We must also ensure that quality remains consistently high. And the products need to be kept as stable and pure as possible.”...**

... says Bernhard Fussnegger, Senior Manager at BASF responsible for all technical questions regarding povidone, copovidone and crospovidone at the Global Marketing unit within Pharma Ingredients and Services. He understands that quality and stability are crucial for maximizing patient safety. That’s why Kollidon is manufactured to the most exacting of quality standards in a

world-class plant – plus most grades now feature our innovative aluminum-free PeroXeal™ packaging concept that significantly reduces peroxide levels and virtually eliminates the risk of contamination with aluminum flakes. So you have peace of mind that your povidone is of excellent quality, and contains virtually no peroxide – meaning you can even use it for oxygen-sensitive APIs.

Walter Reppe,  
inventor of PVP

Walter Reppe, a pioneering BASF  
scientist, invented polyvinylpyrrolidone  
(PVP) over 70 years ago, ...



... and BASF registered the chemical's first pharmaceutical applications in the 1950s. This makes us the most experienced team in the industry. But we don't rest on our laurels. We continue to innovate to address our customers' emerging challenges, setting new standards in terms of stability, purity

and patient safety. The PeroXeal packaging concept, to be rolled out to most of our products by 2011, is our latest enhancement – and thanks to perfectionists such as Bernhard Fussnegger, it's sure not to be the last.

# The many faces of Kollidon®.

For over seven decades, our experts have been developing new grades of PVP in response to emerging market requirements.

Today, there is a Kollidon product perfectly suited for almost any application. In the pharmaceutical sector, this versatile excipient can be deployed as a binder,

disintegrant, lyophilisation agent, suspension stabilizer and thickener. And new uses keep being discovered all the time.

## The Kollidon advantage

### The broad Kollidon portfolio delivers tangible benefits:

- Consistently high quality for reliable performance and formulation stability
- Suitable for oxygen-sensitive APIs – opening the door for new applications
- The original PVP from the most experienced PVP team in the industry
- Cutting-edge PeroXeal™ packaging concept for product stability

### The following pages highlight just a small selection of Kollidon products:

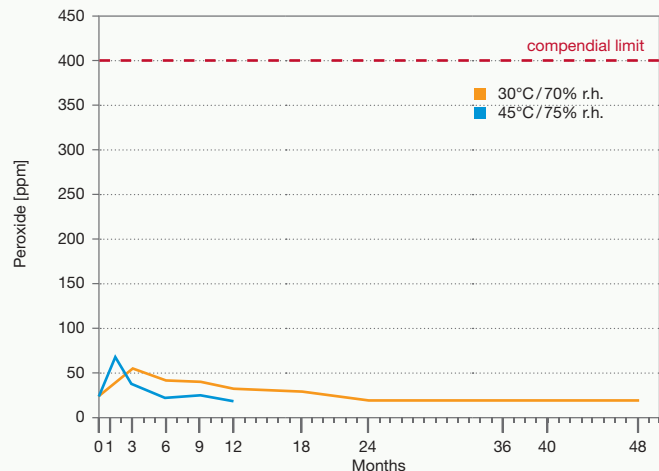
- Kollidon 30
- Kollidon CL
- Kollidon 90 F
- Kollidon VA 64

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## Kollidon 30

The PVP that started it all. Invented by Walter Reppe over 70 years ago, Kollidon 30 can be deployed as a binder in granules and tablets, and as a pore-former in taste-masking formulations – plus it can improve bioavailability of certain poorly soluble actives. And thanks to the new PeroXeal packaging concept that dramatically reduces peroxide levels, Kollidon 30 can now be used for entirely new applications.

Peroxide level of Kollidon 30 in PeroXeal

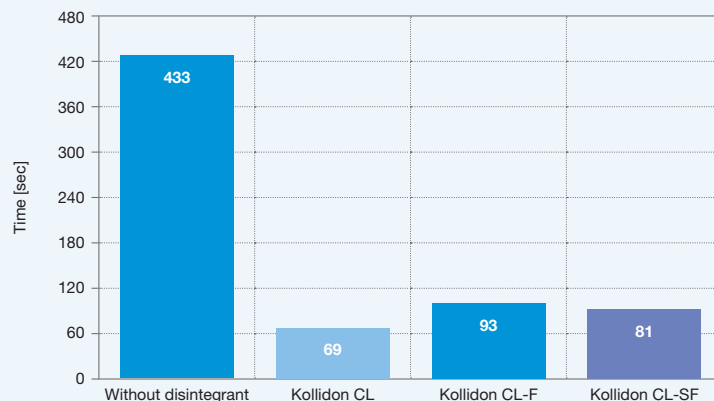


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## Kollidon CL

The Kollidon CL family is the industry's widest portfolio of super-disintegrants and dissolution enhancers. These highly functional cross-linked PVP polymers ensure that active ingredients are released from any solid dosage form at exceptionally high speed. In addition, they improve bioavailability of certain poorly soluble APIs. Kollidon CL is available as standard, fine, superfine and micronized.

6% disintegrant in a Ludipress LCE placebo formulation

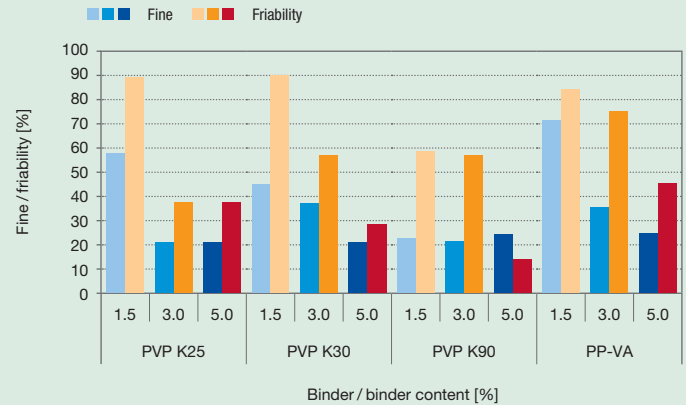


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## Kollidon 90 F

Kollidon 90 F is the strongest wet-granulation binder on the market. Primarily used as a binder in granules and tablets, it can also be deployed to modify the viscosity of liquid dosage forms, and improve bioavailability of certain poorly soluble actives.

Granulation efficiency and granule stability related to binder concentration

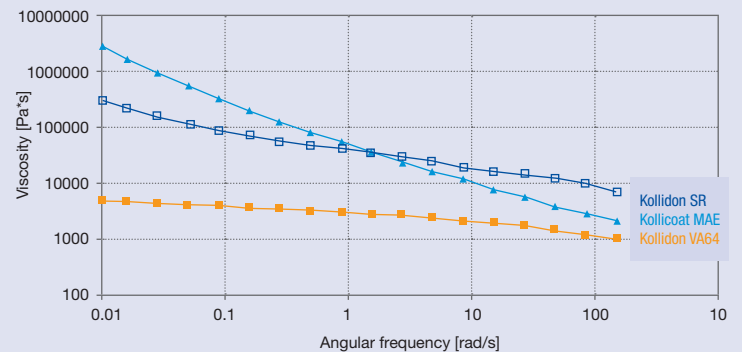


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## Kollidon VA 64

A copovidone with an exceptionally high binding capacity, Kollidon VA 64 can be used as a dry binder for direct compression tableting and as a soluble binder for granulation. These properties make it an attractive and cost-effective alternative to natural binders. In addition, it is ideal as a solubilizer in hot-melt extrusion processes.

Viscosity as a function of shear rate



Shear stress controlled rotational rheometer (Rheometrics SR5)  
Plate plate geometry  
Temperature: 170°C

## Innovative PeroXeal™ packaging concept for matchless quality and purity.



At BASF, we believe in producing the very best quality, and in ensuring that our products stay fresh as long as possible – because consistent performance of raw materials is a pre-requisite for stable formulation.

This is why we developed the PeroXeal packaging concept: a combination of different film layers complemented by inert gas flushing and heat sealing to reduce residual oxygen. The new packaging will be rolled out to most of our products in 2011.

Thanks to PeroXeal packaging, we were able to significantly extend Kollidon's retest period. So worrying about peroxide levels, K values and API degradation is a thing of the past – opening the door for entirely new applications. When working with oxygen-sensitive ingredients, for example, you can now use Kollidon as an alternative to excipients derived from natural raw materials. What's more, as the packaging is aluminum-free, the risk of contamination with aluminum flakes is virtually eliminated. The omission of this energy-intensive material has also shrunk our environmental footprint. And best of all, PeroXeal is available at no additional cost.

The innovative PeroXeal packaging

# There's a Kollidon® product for almost any application:

Functionality	Product		Description
Binder	Kollidon 25	*	Soluble povidone for wet binding.
	Kollidon 30	*	Most widely used soluble povidone for wet binding.
	Kollidon 30 LP	*	Stabilized povidone for oxygen-sensitive and unstable formulations.
	Kollidon 90 F	*	Soluble high-molecular povidone with highest binding properties within the povidone range.
	Kollidon CL-M		Water-insoluble, micronized crospovidone also applicable as dry binder apart from its main use as suspension stabilizer.
	Kollidon CL-SF	*	Water-insoluble, super-fine crospovidone also applicable as dry binder apart from its main use as disintegrant.
	Kollidon VA 64		Soluble copovidone with less hygroscopicity compared to povidone K30 but comparable binding properties. It is often used as dry binder.
	Kollidon VA 64 Fine		Highly effective soluble copovidone for dry binding due to a finer particle size.
Matrix polymer	Kollidon VA 64		Soluble copovidone widely used for instant release formulation with hot-melt extrusion.
	Kollidon SR		Water-insoluble excipient formulation used as matrix in sustained release formulations by direct compression or hot-melt extrusion.
Disintegrant	Kollidon CL	*	Water-insoluble crospovidone with outstanding disintegrant properties.
	Kollidon CL-F	*	Water-insoluble crospovidone of fine particle size exhibits strong disintegrant and pleasing haptic properties. It provides smooth tablet surface and improves tablet hardness.
	Kollidon CL-SF	*	The finest grade of water-insoluble crospovidone disintegrant available in the market for small and oral disintegrating tablets. It provides smooth tablet surface and strongly improves tablet hardness.
Lyophilization agent	Kollidon 12 PF		Soluble low molecular povidone can be used to stabilize micro-molecular structure in lyophilisates and injectables.
	Kollidon 17 PF		
	Kollidon 25	*	Soluble povidone can be used to stabilize micro-molecular structure in lyophilisates.
	Kollidon 30	*	
Suspension stabilizer	Kollidon 12 PF		Soluble low molecular povidone applicable as dispersing agents for parenteral suspensions.
	Kollidon 17 PF		
	Kollidon 90 F	*	Soluble, high-molecular povidone with thickening properties to stabilize suspension.
	Kollidon CL-M		Micronized, water-insoluble crospovidone to ease re-dispersion of sediments.
Thickener	Kollidon 90 F	*	Soluble, high-molecular povidone with thickening properties to increase viscosity and adhesion.
Complexing agent and Dissolution enhancer	Kollidon 12 PF		Soluble povidones can form hydrogen bonds with compounds with complementary structures for improved dissolution.
	Kollidon 17 PF		
	Kollidon 25	*	
	Kollidon 30	*	
	Kollidon 30 LP	*	
	Kollidon 90 F	*	
	Kollidon CL	*	Water-insoluble crospovidones can form hydrogen bonds with compounds with complementary structures for improved dissolution.
	Kollidon CL-F	*	
	Kollidon CL-M		
	Kollidon CL-SF	*	

\* Already available in new PeroXeal packaging



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**The Kollidon® portfolio of various PVP grades sets new standards in quality, purity and patient safety.**

- Consistently high quality for reliable performance and formulation stability
- Suitable for oxygen-sensitive APIs – opening the door for new applications
- The original PVP from the industry's most experienced team
- Cutting-edge PeroXeal™ packaging concept for greater stability

**BASF's experts are happy to answer all your questions. Simply send an email to [kollidon@basf.com](mailto:kollidon@basf.com) or visit [www.kollidon.com](http://www.kollidon.com)**

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