

**kuraray**

*kuraray*  
**poval**  
**exceval**  
**elvanol**

**We connect the things in life.**

Specialities for emulsion  
polymerization and adhesives

*kuraray*  
**poval**



## Optimised solutions for polymerization & adhesive processes **KURARAY POVAL™** and **EXCEVAL™**

With KURARAY POVAL and EXCEVAL, Kuraray offers a wide range of excellent specialities particularly designed for the emulsion polymerization & adhesives process. KURARAY POVAL and EXCEVAL are the trademarks of the polyvinyl alcohol (PVOH) from Kuraray. Both polymers are water soluble and characterised by their molecular weight (determined by their viscosity) and by the degree of hydrolysis. EXCEVAL, Kuraray's novel ethylene modified copolymer is water soluble like standard polyvinyl alcohol and can be processed in

conventional conditions. The hydrophobic-hydrophilic balance of Exceval has been optimized to combine good water resistance and sufficient viscosity stability of the aqueous solution.

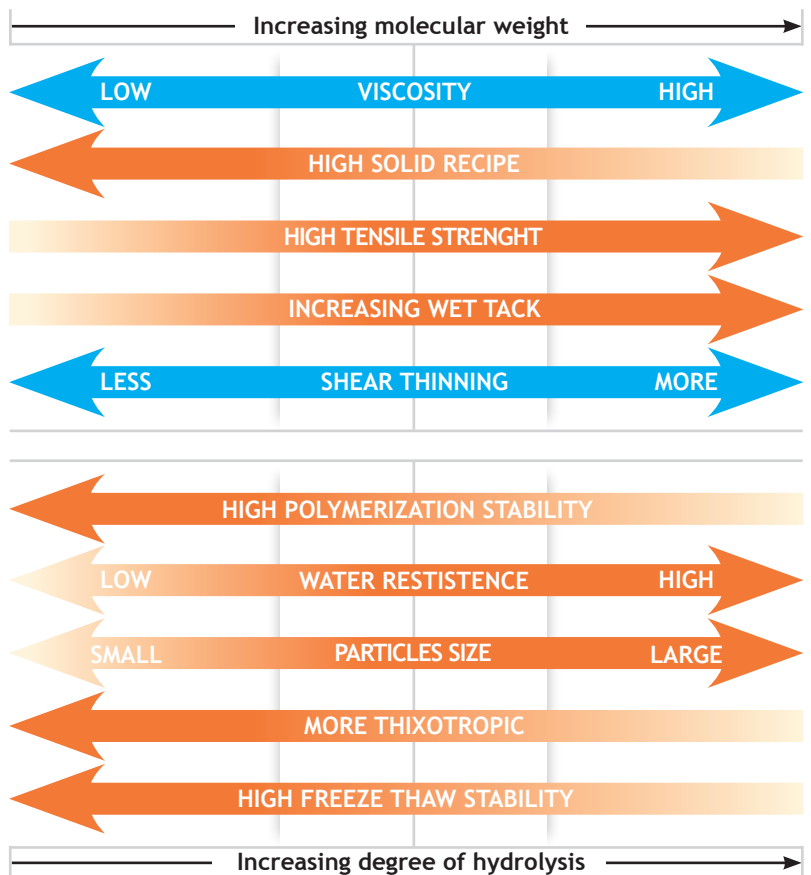
Kuraray's polyvinyl alcohol specialities are available in a wide range of different grades, varying in molecular weight/viscosity and degree of hydrolysis. Both factors considerably determine the performance properties of PVA based emulsions.

### Polyvinyl alcohols tailored to your needs

Choosing the appropriate grade of PVOH is decisive for achieving the desired performance spectrum. The use of PVOH with a lower degree of hydrolysis will promote polymerization stability and the formation of lower particle size whereas higher degree of hydrolysis PVOH will enhance the water resistance. Also for certain applications, blends of polyvinyl alcohol with different degree of hydrolysis are recommended to properly balance emulsion stability and water resistance. PVOH with a higher molecular weight/viscosity results in emulsion polymers with high shear thinning tendency and higher wet tack. Simultaneously, a lower degree of hydrolysis PVA allows for improved water sensitivity.

Due to the high water resistance of EXCEVAL HR-3010 and RS-2117 a D3 performance level can be achieved without using any crosslinker. If an even higher water resistance performance is needed, it can be achieved by simply using standard crosslinking systems. Furthermore, Kuraray's EXCEVAL RS-1000 series show a high grafting capability as well as an enhanced stabilization performance.

#### Emulsion properties as a function of the PVOH molecular weight and degree of hydrolysis



## Applications specialized in specialities

In emulsion polymerization processes, Kuraray's PVOH specialities are excellent colloidal stabilisers for vinyl acetate based emulsions, that are highly suitable as raw materials for wood glues and paper adhesives. Among all the beneficial properties that polyvinyl alcohols add to the final product, the most important ones are the improved wet tack, the good heat resistance, the improved adhesion to hydrophilic substrate and its ability to be crosslinked.

By simultaneously using different emulsi-

fiers, finer emulsions can be produced, that are suitable as binders in paint applications. Furthermore, the desired particle size for a particular purpose can be achieved by adjusting the ratio of polyvinyl alcohol and emulsifier.

Kuraray's polyvinyl alcohols can also be added to polymer emulsions after polymerisation to improve certain properties of the end product, such as viscosity or open time.



## Adding value to your products - worldwide



KURARAY POVAL™, EXCEVAL™, ELVANOL™ and MOWIFLEX™ are the trademarks for polyvinyl alcohols made by Kuraray. Their key characteristics – outstanding film-forming properties and high binding strength – add real value to your products. Our polymers are water-soluble, highly reactive, crosslinkable and foamable. They have high pigment binding capacity, protective colloid characteristics and thickening effects. The physical and chemical properties of KURARAY POVAL™ make it ideal for a wide variety of applications, ranging from adhesives through paper and ceramics to packaging

films. Many of our polymers are food contact-approved and thus suitable for food applications. Ecologically KURARAY POVAL™ is advantageous due to its biodegradability and the fact that combustion does not generate residues. It is available in various particle sizes from granules to fine powders.

Kurararay produces its wide range of KURARAY POVAL™ grades in Japan, Singapore, Germany and the USA. Kuraray's global production and service network make us your partner of choice for innovative high-quality PVOH resins.

**KURARAY - Here to Innovate.**

### Kurararay America, Inc.

2625 Bay Area Blvd.,  
Suite 600 Houston, TX77058  
United States of America  
Phone: +1 800 423 9762  
[info.kurararay-poval@kuraray.com](mailto:info.kurararay-poval@kuraray.com)

### Kurararay Europe GmbH

Philipp-Reis-Str. 4  
65795 Hattersheim am Main,  
Germany  
Phone: +49 69 305 85 351  
[info.eu-poval@kuraray.com](mailto:info.eu-poval@kuraray.com)

### Kurararay Asia Pacific Pte., Ltd.

250 North Bridge Road  
#10-01/02 Raffles City Tower  
Singapore 179101  
Phone: +65 6337 4123  
[infofoval.sg@kuraray.com](mailto:infofoval.sg@kuraray.com)

### Kurararay China Co., Ltd.

Unit 2207, 2 Grand Gateway  
3 Hongqiao Road, Xuhui Dis-  
trict, Shanghai 200030, China  
Phone: +86 21 6119 8111  
[infofoval.cn@kuraray.com](mailto:infofoval.cn@kuraray.com)

## Head Office:

### Kurararay Co., Ltd.

Ote Center Bldg.  
1-1-13, Otemachi Chiyoda-ku  
Tokyo 100-8115, Japan  
Phone: +81 3 67 01 1000  
[infofoval.jp@kuraray.com](mailto:infofoval.jp@kuraray.com)