

® **Mowiol**
® **Kuraray Poval**®
® **Exceval**
® **Mowiflex**

Specialities for
paper applications



Specialized in Specialities

KSE – meeting your most demanding needs

®Mowiol & Kuraray Poval®

Mowiol and Kuraray Poval are the trademarks of the polyvinyl alcohols (PVA) from Kuraray – speciality polymers with outstanding characteristics such as film-forming capability, solvent resistance and high binding strength. PVA from Kuraray are water-soluble, highly reactive and physiologically safe. The physical and chemical properties of Mowiol and Kuraray Poval make them ideal partners for a wide variety of applications.

The applications for PVA range from adhesives through paper and ceramics to packaging films. Mowiol and Kuraray Poval are supplied as fine granules. Some grades of these products are also available as finer particles. When stored (ideally in their original packaging) at room temperature in dry, closed sacks or containers, polyvinyl alcohols can be kept for a virtually unlimited period of time. Polyvinyl alcohols are also advantageous from an ecological viewpoint. They are biodegradable or thermally degradable, breaking down into carbon dioxide and water without any residue.

Kuraray has developed various modified PVA (e.g. Exceval, Mowiflex, Kuraray R-polymers) which offer special features in addition to the properties of the original product, regular PVA. These special products generally involve functional groups attached to the main molecule via true covalent bonds which enable them to display specific physical properties, to undergo certain reactions or to adhere to selected materials. Kuraray will continue to strive for innovative products with the capability to solve today's technical problems. To accomplish this, it maintains research centres in Japan and Europe.



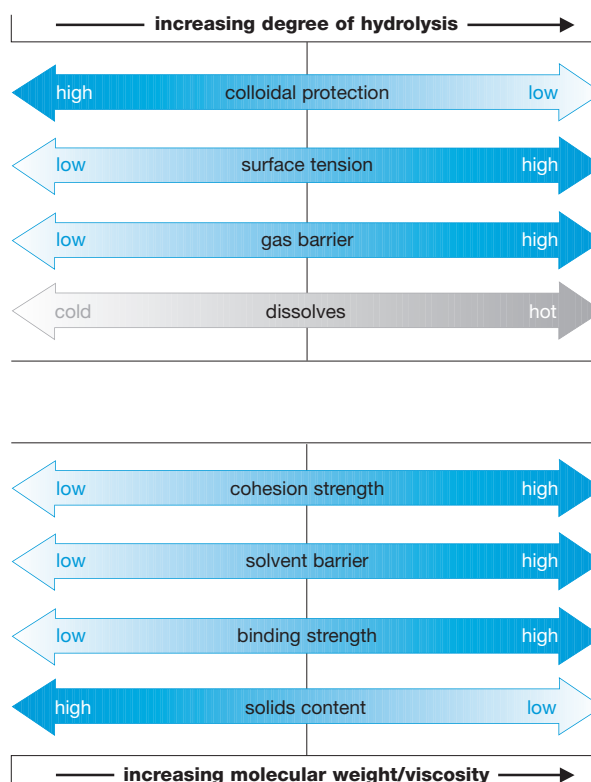
Technical overview



Polyvinyl alcohol is a water soluble non-toxic polymer available as a granular powder. Derived from polyvinyl acetate, PVAs are primarily characterised by their molecular weight (which is determined via viscosity measurements) and their degree of hydrolysis. Therefore, most property variations are attributable to these two parameters. The viscosity of an aqueous PVA solution is proportional to its molecular weight.

Owing to the high number of polyhydroxyl groups, fully hydrolysed PVA exhibit strong cohesive and adhesive forces; these forces are due to the hydrogen bridges, that PVA molecules are able to form. On the other hand, owing to the higher number of residual acetyl groups, partially hydrolysed PVA have a looser, tensive-like structure enabling them to serve as protective colloids. In general, PVA needs cooking temperatures to dissolve. The figure below elucidates the changes in the properties of PVA if molecular weight/viscosity or degree of hydrolysis are varied.

Property profile of polyvinyl alcohols



The data sheets added to this page provide detailed technical information.

If, for some reasons, the data sheets get lost or if you need updated information, please contact us.

Kuraray Specialities Europe GmbH

65926 Frankfurt am Main
Germany

Phone +49 69 305 - 8 53 00

Fax +49 69 305 - 8 53 99

<http://www.kuraray-kse.com>

This information is based on our present state of knowledge and is intended to provide general notes on our products and their uses. It should therefore not be construed as guaranteeing specific properties of the products described or their suitability for a particular application. Any existing industrial property rights must be observed. The quality of our products is guaranteed under our General Conditions of Sale.

Bright ideas for paper applications



The actual and potential applications of Mowiol and Kuraray Poval, as well as of our modified PVA, cover a broad spectrum. The main uses of these products are in the paper, textile, construction and adhesives industries as well as in the cosmetics and packaging sectors.

In **paper applications** the Mowiol and Kuraray Poval grades play an important role as **carriers for optical brighteners** in line with the trend toward enhanced paper whiteness. Simultaneously, they serve as thickening and water retention aid for better runnability. In the manufacture of **banknote papers**, Kuraray's PVA make the web extremely resistant to mechanical stress. Owing to the insolubility of polyvinyl alcohol in nonaqueous solvents, Mowiol, Kuraray Poval and Exceval grades are ideal for forming

barrier coatings, e.g. for release papers or for food wrapping. In other sectors Mowiol, Kuraray Poval and Kuraray R-polymers are utilized as powerful binders to produce matt and glossy **inkjet papers**.

Besides their excellent performance in paper applications, PVA grades keep foods and other products fresh when these products are covered with tear-resistant films having a neutral taste and acting as a barrier to aromas. PVA's solvent resistance is put to use in the production of protective clothing. As a component of remoistenable adhesives, e.g. for postage stamps, partially hydrolysed PVA grades ensure adhesive strength and sheet evenness even at fluctuating air humidity. In a further application, Mowiol and Kuraray Poval are utilized as temporary binders to produce high-strength industrial ceramics. The manufacture of sponges from foamed and cross-linked PVA solution, resulting in chemically resistant and mechanical stable products, is another amazing application.



Kuraray – world leader in polymer chemistry

Kuraray Specialities Europe (KSE) is the leading supplier of polyvinyl alcohol, polyvinyl butyral and films derived therefrom in Europe. The headquarter of KSE – as well as production plants for [®]Mowiol (polyvinyl alcohol) and [®]Mowital (polyvinyl butyral) are based in Frankfurt/Main, Germany. The production site for polyvinyl butyral films (Trosifol[®]) is located in Troisdorf, near Cologne.

KSE is a wholly owned subsidiary of the Japanese Kuraray Co. Ltd., Tokyo, which manufactures medical products, fibres, textiles and man-made leather in addition to chemical specialities. Kuraray is the world market leader in the production of water-soluble polymer polyvinyl alcohol. Employing more than 7,000 people, the Kuraray Group achieves annual sales of about three billion euros.



Frankfurt-Höchst Industrial Park, production and administrative headquarters of Kuraray Specialities Europe

Kuraray Specialities Europe GmbH

65926 Frankfurt am Main
Germany
Phone +49 69 305 - 8 53 00
Fax +49 69 305 - 8 53 99
<http://www.kuraray-kse.com>

Overseas Network

Kuraray Holdings U.S.A., Inc
101 East 52nd Street/26th Floor
New York, N.Y. 10022,
U.S.A.
Phone +1 21 29 86 22 30
Fax +1 21 28 67 35 43

Kuraray Singapore Pte., Ltd.

331 North Bridge Road
#18-02 Odeon Towers
Singapore 188720
Phone +65 337 - 41 23
Fax +65 337 - 19 12

Head Office

Kuraray Co., Ltd., Tokyo
OTE Center Bldg. 1-1-3
Otemachi Chiyoda-ku
Tokyo 100-8115, Japan
Phone +81 3 67 01 - 10 00
Fax +81 3 67 01 - 10 05