**EXCEVAL™** contributes to the production of polyvinyl acetate emulsion for wood adhesives, high water resistance like DIN D3 level can be achieved. This level of performance is accomplished without the addition of any cross-linking agents thanks to the excellent water resistance of EXCEVAL™ itself. EXCEVAL™ contributes to the production of “high water resistance” when used as a dispersing aid / protective colloid for the manufacture of polyvinyl acetate emulsion for wood adhesives, high water resistance like DIN D3 level can be achieved. This level of performance is accomplished without the addition of any cross-linking agents thanks to the excellent water resistance of EXCEVAL™ itself. EXCEVAL™ contributes to the production of “high water resistance” when used as a dispersing aid / protective colloid for the manufacture of polyvinyl acetate emulsion for wood adhesives, high water resistance like DIN D3 level can be achieved. This level of performance is accomplished without the addition of any cross-linking agents thanks to the excellent water resistance of EXCEVAL™ itself.

EXCEVAL™ is the trade mark of Kuraray’s polyvinyl alcohol product portfolio. Its unique morphology, coming from a special production process expands its range of applications. An important advantage is improved water solubility and dissolution time and therefore energy consumption could be reduced dramatically. EXCEVAL™ can be dissolved in the continuous casting process designed for starch in which standard polyvinyl alcohols remain undissolved. This will be a significant benefit in paper coating applications, especially where polyvinyl alcohols are used together with starch to enhance performance. Another valuable advantage is to produce an embossed binding with film forming properties due to its high water resistance. In aqueous gas barrier coating applications, coatings made of EXCEVAL™ appear significantly less humidity. Furthermore, the resulting coatings are highly transparent and glossy, have a strong chemical resistance and provide good adhesion to non-material adhesives as well as excellent printability.

One additional interesting characteristic is the formation of an excellent oil and grease barrier when coated on papers because of its high chemical resistance and the fact that combustion does not generate residues. It 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.

Kuraray 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.
The applications of polyvinyl alcohol are extremely wide-ranging. The main uses are in the paper, textile, construction and adhesive industries as well as cosmetics, packaging and electronics. The physical and chemical properties make polyvinyl alcohol very versatile. KURARAY POVAL™, EXCEVAL™ and ELVANOL™ are water soluble, have excellent film forming characteristics and high tensile strength.

In addition, the polymers are highly elastic and resistant to organic solvents. They also have dispersing power / surface activity to make emulsions and suspensions like surfactants. Reactivity of numerous hydroxyl groups with substances such as aldehydes and other reactive compounds expands the range even wider.

In the paper industry polyvinyl alcohol plays an important role as a carrier for optical brighteners. In the manufacture of bank notes it guarantees extremely hard-wearing properties and its use as a creping adhesive contributes to high productivity of tissue paper.

In adhesives, polyvinyl acetate and vinyl acetate - ethylene emulsions realize sufficient adhesive strength on woods and papers thanks to the stabilization by polyvinyl alcohol. As a component of remoistenable adhesives, e.g. for postage stamps, partially hydrolyzed grades ensure that the adhesive strength is not impaired even in fluctuating air humidity. In the production of high-strength industrial ceramics, polyvinyl alcohol acts as a temporary binder / green strength additive.

Their solvent resistance ensures the functionality of protective clothing. In the construction industry polyvinyl alcohol is well used in compounds as a film forming agent.

In the manufacture of composite paper, polyvinyl alcohol is also well known as a binder of the fine particle inorganic fillers like fumed silica in ink jet papers for high-quality photo printing.

### Main Application Areas

- **Pharmaceuticals**
- **Photo sensitive coatings**
- **Plants protection casings**
- **Polyvinyl alcohol sponges**
- **Polyvinyl butyral production**
- **Protective and strippable coatings**
- **PVC compounding**
- **PVC suspension/polymerisation**
- **Textile non-wovens**
- **Textile sizing**
- **Thermoplastic processing**
- **Water-soluble barrier coatings**
- **Water-soluble films**

### Possible Application Areas

- **Abrasives**
- **Granulation**
- **Adhesives**
- **Building industry**
- **Ceramic industry**
- **Cosmetics**
- **Dust binding**
- **Detergent and cleaning agents**
- **Electronic industry**
- **Emulsion polymerization**
- **Glass fiber**
- **Grunalume**
- **Marine, coatings, cloth alcohols**
- **Oil field cementing**
- **Plant industry**
- **Paper industry**
- **Pharmaceuticals**
- **Plastics extrusion**
- **Plastic water treatment**
- **Plant protective coating**
- **Monofilament grain**
- **Monofilament texturing**
- **Polymer/phenolic resins**
- **Protective and stripable coatings**
- **PVC compounding**
- **PVC suspension/polymerisation**
- **Textile non-revers**
- **Textile sizing**
- **Thermoplastic processing**
- **Thermosetting**
- **Tubing & tubing**
- **Water-soluble films**

*www.KURARAY-POVAL.com*
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In the paper industry polyvinyl alcohol plays an important role as a carrier for optical brighteners. In the construction industry polyvinyl alcohol is also well known as a binder of the fine inorganic fibers like fumed silica in ink jet papers for high-quality photo-printing.

In adhesives, polyvinyl acetate and vinyl acetate - ethylene emulsions realize sufficient adhesive strength on woods and papers thanks to the stabilization by polyvinyl alcohol. As a component of non-reversible adhesives, e.g. for postage stamps, partially hydrolyzed grades ensure that the adhesive strength is not impaired even in fluctuating air humidity. In the production of high-strength industrial ceramics, polyvinyl alcohol acts as a temporary binder / green strength additive.

Their solvent resistance ensures the functionality of protective clothing. In the application of oil field cement polyvinyl alcohol significantly reduces fluid loss which prevents defects in oil wells.

**POLYVINYL ALCOHOL – a champion in versatility**
The applications of polyvinyl alcohol are extremely wide-ranging. The main uses are in the paper, textile, construction and adhesive industries as well as cosmetics, packaging and electronics. The physical and chemical properties make polyvinyl alcohol very versatile. KURARAY POVAL™, EXCEVAL™ and ELVANOL™ are water soluble, have excellent dissolution characteristics and high tensile strength.

In addition, the polymers are highly elastic and resistant to organic solvents. They also have dispersing power / surface activity to make emulsions and suspensions like surfactants. Reactivity of numerous hydroxyl groups with substances such as aldehydes and other reactive compounds expand the range even wider.

In the paper industry polyvinyl alcohol plays an important role as a carrier for optical brighteners. In the construction industry polyvinyl alcohol is a well-used component in compounds for a film forming agent. In the application of oil field cement polyvinyl alcohol significantly reduces fluid loss which prevents defects in oil wells.
Kuraray’s water-soluble ethylene vinyl alcohol

EXCEVAL™ is the trade mark of Kuraray’s hydrophilically modified polyvinyl alcohol, especially designed for the requirements of "high water resistance". When used as a dispersing aid / protective colloid for the manufacture of polyvinyl alcohol aqueous solutions for wood adhesives, high water resistance (like DIN 53 level 23) can be achieved. This level of performance is accomplished without the addition of any cross-linking agents thanks to the inherent water resistance of EXCEVAL™ itself. EXCEVAL™ contributes to the production of "formaldehyde free", environmentally friendly wood adhesives. Due to its high water resistance utilized in top coats it is possible to protect the imaging layer from being damaged. In aqueous gas barrier coating applications, coatings made of EXCEVAL™ acquire significantly less humidity. Therefore EXCEVAL™ provides coating with excellent water resistance properties, e.g. toward oxygen, carbon di-oxide and various aromas even at elevated relative humidity. Furthermore, the resulting coatings are highly transparent and glossy, have a strong chemical resistance and provide good adhesion to non-woven material as well as excellent printability. One additional interesting character is the formation of an excellent oil and grease barrier when coated on papers because of the formation of an excellent oil and grease barrier when coated on papers due to its hydrophobic modified polyvinyl alcohol characteristics and thickening properties. They have high pigment binding capacity, provide good adhesion to fine particle materials like inorganic fillers. This characteristic provides a more uniform mold characteristic provides a more uniform mold formation of an excellent oil and grease barrier when coated on papers due to its hydrophobic modified polyvinyl alcohol characteristics and thickening properties. They have high pigment binding capacity, provide good adhesion to fine particle materials like inorganic fillers. This characteristic provides a more uniform mold formation of an excellent oil and grease barrier when coated on papers due to its hydrophobic modified polyvinyl alcohol characteristics and thickening properties. They have high pigment binding capacity, provide good adhesion to fine particle materials like inorganic fillers. This characteristic provides a more uniform mold. ELVANOL™ T grades are unique copolymers with unique properties. From an application point of view, ELVANOL™ T grades are unique copolymers with unique properties. With their unique particle morphology, coming from a special production process that results in a range of applications. As an important advantage it is possible to produce a product with high water solubility and dissolving time which results in less permeability of liquids. 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. Kuraray produces its wide range of KURARAY™ POVAL™ grades in Germany, Germany and the USA. Kuraray’s global production and service network make us your partner of choice for innovative high quality POVAL resins.

EXCEVAL™ - Escalating and ELVANOL™ and KURARAY POVAL™ are trademarks for polyvinyl alcohol 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 coatings 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. Kuraray produces its wide range of KURARAY™ POVAL™ grades in Germany, Germany and the USA. Kuraray’s global production and service network make us your partner of choice for innovative high quality POVAL resins.

KURARAY - Here to innovate.

Versatility in life.
Polyvinyl alcohol - Application Guide
EXCEVAL™ is an excellent gap filler between paper pulp materials like inorganic fillers. This characteristic provides a more uniform mold formation of an excellent oil and grease barrier when coated on papers because of the excellent water resistance of EXCEVAL™. When used as an embossed coating with fine particle morphology, coating can be reduced dramatically. ELVANOL™ can be used in paper coating formulas and will be the best candidate in non-fluoro chemical barrier agents in the next generation of paper and ceramics to packaging applications. Relying on 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.

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Kuraray Production Sites

Kuraray Sales Offices

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Versatility in life.
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