

# VINNAPAS® EP 1400



## Polymer Dispersions

VINNAPAS® EP 1400 is a poly(vinyl alcohol) stabilized vinyl acetate-ethylene copolymer dispersion with a glass transition temperature ( $T_g$ ) of 0 °C. It was developed as a high performance, cost competitive base polymer dispersion for formulating a variety of water borne adhesives to replace:

- Plasticized vinyl-acetate homopolymer packaging adhesives
- High wet tack, low solids poly(vinyl alcohol) or dextrin/starch based adhesives
- Conventional non-contact extrusion applied adhesive systems

## Properties

VINNAPAS® EP 1400 is a base polymer dispersion for formulating water borne adhesives. It has an excellent balance of wet tack, speed of set, adhesion and heat resistance. It is compatible with a wide variety of formulating additives. It has a high thickening response to plasticizer. The dried adhesive bonds are resistant to water exposure. The low solids provides a long open time with good wet tack. The low  $T_g$  of the dried film provides excellent cold temperature flexibility. This dispersion offers clean machining, easy clean up and is suitable for a variety of roll, extruder and spray applications. VINNAPAS® EP 1400 can be formulated into adhesive systems designed especially for non-contact extrusion machine applications. No formaldehyde or formaldehyde donors are intentionally added to VINNAPAS® EP 1400.

The dry film is tack-free and heat-sealable. The backbone of the polymer is internally flexibilized to give the dried adhesive film high tensile strength and flexibility. This allows adhesives to be formulated that continue to perform with fluctuations in temperature and humidity. This dispersion has excellent heat resistance which is much greater than that exhibited by other plasticized vinyl acetate, vinyl acetate-maleate and vinyl acetate-acrylate copolymers with similar glass transition temperatures. The adhesive strength is excellent after aging, and it exhibits excellent resistance to plasticizer migration.

## Specific features

- Low formaldehyde content
- Produced without APEO

## Technical data

### Specification

Property	Condition	Value	Method
Viscosity, dynamic	25 °C	1700 - 2400 mPa·s	specific method
pH	-	5.0 - 6.0	specific method
Grit	-	max. 50 ppm	specific method

### General Characteristics

Property	Condition	Value	Method
Density	-	1.05 g/cm <sup>3</sup>	specific method
Frost resistance	-	protect from freezing	specific method
Protective colloid / emulsifier system	-	polyvinyl alcohol	-
Glass transition temperature	-	approx. 0 °C	DSC, specific method
Dry tack	-	none	specific method
Film clarity	-	slightly hazy	specific method
Flexibility	-	excellent	specific method
Mechanical stability	-	excellent	specific method
Thickening response	-	high	specific method
Water resistance	-	very good	specific method
high	-	high	specific method

These figures are only intended as a guide and should not be used in preparing specifications.

All the information provided is in accordance with the present state of our knowledge. Nonetheless, we disclaim any warranty or liability whatsoever and reserve the right, at any time, to effect technical alterations. The information provided, as well as the product's fitness for an intended application, should be checked by the buyer in preliminary trials. Contractual terms and conditions always take precedence. This disclaimer of warranty and liability also applies particularly in foreign countries with respect to third parties' rights.

Protect against frost.

## Applications

- Film & Foil Converting
- Film-to-Wood lamination
- Paper Packaging & Converting

## Application details

VINNAPAS® EP 1400 can be used to bond a variety of substrates including but not limited to coated and uncoated paper, cellulose acetate, polystyrene, poly(vinyl chloride) (PVC), and poly(vinylidene chloride). It is recommended for use in high-speed packaging and converting applications where rapid setting speeds, good machining and easy clean-up properties are required. The long open time helps to prevent premature drying under conditions of prolonged exposure to air, especially on large diameter applicator rolls and non-contact extrusion nozzles. The level of ethylene in the polymer acts as an internal plasticizer which provides flexibility and reduces or eliminates the need for plasticizer in many applications. Due to the low  $T_g$ , VINNAPAS® EP 1400 continues to form a film at low temperatures and can be used in the laminating of cold substrates while still maintaining adhesion and heat resistance.

VINNAPAS® EP 1400 can be compounded with typical plasticizers, solvents, fillers and thickeners that are used for water borne packaging adhesives and other poly(vinyl acetate)-based adhesives. It is compatible with other poly(vinyl alcohol) and surfactant stabilized vinyl acetate-based dispersions and acrylic copolymers. This dispersion can be compounded with poly(vinyl alcohol) to create a more water sensitive adhesive.

## Packaging and storage

### Storage

When the dispersion is stored in tanks, proper storage conditions must be maintained. If stored in the original, unopened containers at cool (below 30 °C), but frost-free temperatures the product has a shelf life of 9 months from the date of manufacture. Any longer periods for the maximum storage period that may be described in the Certificate of Analysis which accompanies each shipment of the product, take preference over this suggestion in which case the time period stated in the Certificate of Analysis shall be solely authoritative. Iron or galvanized-iron equipment and containers are not recommended because the dispersion is slightly acidic. Corrosion may result in discoloration of the dispersion or its blends when further processed. Therefore, the use of containers and equipment made of ceramics, rubberized or enameled materials, appropriately finished stainless steel, or plastic (e.g. rigid PVC, polyethylene or polyester resin) is recommended. As polymer dispersions may tend to superficial film formation, skins or lumps may form during storage or transportation. Filtration is therefore recommended prior to utilization of the product.

### Preservation for Transport, Storage and further Processing

The product is adequately preserved during transportation and storage if kept in the original, unopened containers. However, if it is transferred to storage tanks, the dispersion should be protected against microbial attack by adding a suitable preservative package. To maintain proper storage conditions appropriate measures should also be taken to ensure cleanliness of the tanks and pipes. In a storage tank in which the product is not stirred, it is advisable to contact your biocide representative/supplier. Proper procedures must be set up in order to prevent microbial attack between necessary periodic tank cleaning and sanitization. These procedures will vary, since loading and unloading practices in each storage situation will differ slightly. Finished products manufactured from polymer dispersions usually also require preservation. The type and scope of preservation will depend on the raw materials used and the anticipated sources of contamination. The compatibility with other components and the efficacy of the preservative should always be tested in the respective formulation. Preservative manufacturers will be able to advise you about the type and dosage of preservative required.

## Safety notes

Comprehensive instructions are given in the corresponding Safety Data Sheets. These are available on request from WACKER sales offices or may be downloaded from the WACKER Web site [www.wacker.com/vinnapas](http://www.wacker.com/vinnapas).

## QR Code VINNAPAS® EP 1400



**For technical, quality or product safety questions, please contact:**

**Wacker Chemie AG**, Gisela-Stein-Strasse 1, 81671 Munich, Germany  
productinformation@wacker.com, www.wacker.com

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