# VINNOL® H 40/50

VINYL CHLORIDE COPOLYMER, CAS NO. 9003-22-9

## Product description

VINNOL® H 40/50 is a copolymer of approx. 63 wt.% vinyl chloride (VC) and approx. 37 wt.% of vinyl acetate (VAc). Its main use is as a binder for surface coating compounds and printing inks.

## Properties

VINNOL® H 40/50 is a thermoplastic, physically drying binder that forms a film when the solvent contained in the formulation has evaporated.

Like all VC copolymers, VINNOL® H 40/50 is extremely tough, showing permanent flexibility, abrasion resistance, little tendency to swell in the presence of water and low gas permeability. It is also highly resistant to oil, grease, dilute aqueous acids, alkalis and saline solutions, as well as to aliphatic hydrocarbons, such as white spirit, and alcohols.

## Special features

VINNOL® H 40/50 is a high vinyl acetate containing copolymer. It is therefore especially suitable as a cobinder for formulating flexible VINNOL®-paint and printing ink formulations. It is also highly recommended to reduce the sealing temperature in VINNOL®-based heat sealing lacquers.
The solubility in various monomers enables to use VINNOL® H 40/50 as an additive in solvent-free 100% systems to improve adhesion and pigment wetting or to reduce shrinking.
VINNOL® H 40/50 also shows a surprisingly good compatibility with ester soluble nitrocellulose resins and can be used for their modification.

## Application

Typical applications for VINNOL® H 40/50:

- Heat-sealable lacquers
- Printing inks
- Paper and film coatings
- Wood varnishes
- Strippable lacquers
- Masonry paints
- Road-marking paints

## Processing

VINNOL® H 40/50 is generally used in dissolved form.

Ketones, in particular, are excellent solvents for VINNOL® surface coating resins. In the case of VINNOL® H 40/50, esters, too, may be used as single solvents.
Of the chlorinated hydrocarbons, methylene chloride and 1,2-dichloroethane are true solvents.

Aromatic hydrocarbons have a swelling effect but may be combined to a limited extent with true solvents up to 50%. Alcohols and aliphatic hydrocarbons do not dissolve VINNOL® H 40/50.
VINNOL® H 40/50 is also soluble in various monomers (e.g. styrene, methyl methacrylate, 2-ethylhexyl acrylate, 1,6-hexanediol diacrylate and others).

VINNOL® H 40/50 can be plasticized with monomeric and polymeric plasticizers, such as phthalates, adipates, sebacates, citrates, phosphates, epoxides and chlorinated paraffins.

VINNOL® H 40/50 is fully compatible with all other VINNOL® surface coating resins. It also combines well with many acrylic polymers and ketone resins, ester soluble nitrocellulose as well as with some epoxides. Alkyd resins, polyvinyl acetates and polyvinyl butyrals are in general incompatible with VINNOL® H 40/50. We recommend always checking the compatibility of VINNOL® H 40/50 with the polymer in question.

VINNOL® H 40/50 shows good compatibility with pigments routinely used in the coatings industry. Care must be taken when using pigments containing zinc or cadmium because these catalyze the decomposition of VC copolymers at elevated temperatures. The same applies to iron-oxide pigments.

Despite good inherent stability, it is necessary for some applications to stabilize coatings based on VINNOL® H 40/50 against heat and/or UV light. Epoxy compounds often suffice to stabilize these coatings against low thermal impact. Where higher temperatures are involved, it is advisable to use calcium/zinc or organotin stabilizers.
Outdoor applications require the additional use of UV stabilizers along with thermal stabilizers optimized for

these conditions.

To avoid risk of discoloration, contact with iron should be avoided both during preparation of the solution and during subsequent storage of the product. VINNOL®-based surface-coating resins should be stored in coated containers.

## Storage

Store VINNOL® H 40/50 under dry conditions and at room temperature (below 25 °C). Under these conditions, the product has a shelf life of at least 12 months, from the delivery date. If the material is kept beyond the recommended shelf life, it is not necessarily unusable, but the user should perform a quality control on the properties relevant to the application.

The properties determined in our pre-release quality control may change during storage, depending on storage conditions, and deviate from the specification.

## Packaging

VINNOL® H 40/50 is packed in 25-kg, coated three-ply paper bags containing a polyethylene liner.

## Additional information

VINNOL® H 40/50 can be used for applications with food contact in compliance with FDA 21 CFR §175.105 and §175.300.
Comprehensive information regarding evaluation with respect to other food contact regulations may be requested from our account managers and Wacker subsidiaries.

If VINNOL® H 40/50 is used in applications other than those mentioned, the choice, processing and use of VINNOL® H 40/50 is the sole responsibility of the purchaser. All legal and other regulations must be complied with.

## Safety notes

Comprehensive instructions are given in the corresponding Material Safety Data Sheets. These are available on request from WACKER sales offices or may be downloaded from the WACKER Web site www.wacker.com/vinnol.

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## Product data

| Specification data | Inspection Method | Value |
|---|---|---|
| Chlorine content | specific method | 35,1 - 36,3 wt. % |
| K-value | DIN EN ISO 1628-2 | 49 - 51 |
| Volatiles | specific method | < 2,0 wt. % |
| Viscosity [1] (20% solids in MEK) | DIN 53015 (20°C) | 45 - 65 mPa*s |

| Typical general characteristics | Inspection Method | Value |
|---|---|---|
| Efflux time (20% in MEK) | DIN EN ISO 2431 (4 mm) | approx. 45 s |
| Supply form | Visual | white powder |
| Particle size | specific method | < 1,0 mm |
| Bulk density | DIN EN ISO 60 | approx. 750 kg/m³ |
| Density | DIN 66137-2 | 1,31 g/cm³ |
| Glass transition temperature | DSC (DIN 53765 / ISO 11357-5) | approx. 60 °C |
| Molecular weight ($M_W$) | SEC, PS-Standard | 60000 - 80000 |

[1] after dissolving at 50°C
Figures below "Typical general characteristics" are intended as a guide and should not be used in preparing specifications.

The management system has been certified according to
DIN EN ISO 9001 and
DIN EN ISO 14001



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

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