VINNOL® H 15/45 M

Vinyl chloride Co- and Terpolymers

VINNOL® H 15/45 M is a carboxylate-containing terpolymer of approx. 84 wt. % vinyl chloride (VC), approx. 15 wt. % vinyl acetate (VAc) and approx. 1 wt. % dicarboxylic acid.

Its main use is as a binder for surface coating compounds and printing inks.

Properties

VINNOL® H 15/45 M 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 15/45 M 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
Due to its carboxyl group content, VINNOL® H 15/45 M adheres very well on metal surfaces.

It can also be used as a reaction partner or combination binder in reactive systems and can e.g. be crosslinked with isocyanates, polyaziridines or polycarbodiimides.

Technical data

Specification

Property	Condition	Value	Method
K-value	-	47 - 49	DIN EN ISO 1628-2
Viscosity, dynamic (20% in MEK)[(1)]	20 °C	50 - 70 mPa·s	DIN 53015 (20°C)
Acid number	-	5.5 - 7.5 mg KOH/g	specific method
Chlorine content	-	47.1 - 48.3 wt. %	specific method
Volatiles	-	< 1.0 wt. %	specific method

[1]after dissolving at 50 °C

General Characteristics

Property	Condition	Value	Method
Efflux time (20% in MEK)	-	approx. 50 s	DIN EN ISO 2431 (4 mm)
Supply form	-	white powder	Visual
Glass transition temperature	-	approx. 74 °C	DSC (DIN 53765 / ISO 11357-5)
Molecular weight (Mw)	-	60000 - 80000 g/mol	SEC, PS-Standard
Particle size	-	< 1.0 mm	specific method

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

Applications

- Anti-Corrosive Coatings
- Automotive Coatings
- Can Coatings
- Coil Coatings
- Film & Foil Converting
- Gravure Printing
- Heat Sealing Coatings
- Industrial Adhesives
- Marine & Protective Coatings

- Pad Printing
- Plastic Coatings
- Screen Printing
- Transfer Printing

Application details

Typical applications:
Solventbased surface coating of
- metal
- plastic, in particular polar and/or pretreated plastic surfaces
- minerals (e.g. for applications in the construction sector)
- fabric
- paper

Adhesion primers on metal, plastic, fabric and paper surfaces
General purpose adhesives.

Processing
VINNOL® H 15/45 M is generally used in dissolved form.
Ketones and esters are preferably used as solvents for VINNOL® H 15/45 M. Esters have a lower solvation power compared to ketones. While aromatic hydrocarbons can be used to a limited extent in combination with true solvents, alcohols and especially aliphates are non-solvents for VINNOL® H 15/45 M.

More information about SOLUBILITY & VISCOSITY behaviour of this product can be seen and downloaded in the DOCUMENTS area at this LINK:

https://www.wacker.com/h/polymerharze/vinylchlorid-co-und-terpolymere/vinnol-h-1545-m/p/000010766

To prepare the solution, it is recommended to first introduce solvents and liquid additives and then add VINNOL® with stirring. The polymer powder should preferably trickle directly into the stirrer spout in order to achieve uniform wetting and rapid dispersion. Depending on the solvent type, concentration and stirring system, a dissolution time of approx. 30 minutes to approx. 4 hours at room temperature is recommended until a clear, particle-free solution is achieved. By heating the mixture to temperatures of up to approx. 50°C, depending on the solvent system, faster and more complete clear solubility can be achieved.

VINNOL® H 15/45 M can be plasticized with monomeric and polymeric plasticizers such as phthalates, adipates, sebacates, citrates, phosphates, epoxidized compounds and chlorinated paraffins.

VINNOL® H 15/45 M is fully compatible with all other VINNOL® surface coating resins. It also combines well with many acrylic polymers, ketone resins as well as with some epoxy resin systems. There is also generally good compatibility with alkyd resins that are not supplied in aliphatic solvents, as well as with numerous polyurethane resin systems. Nitrocellulose, polyvinyl acetate and polyvinyl butyral cannot generally be combined with VINNOL® H 15/45 M. The compatibility of VINNOL® H 15/45 M with other polymers must be checked on a case-by-case basis.

If pigments or dyes are used, their compatibility with VINNOL® H 15/45 M must be checked in advance. Some pigments/ dyes can produce thixotropic effects and/or negatively influence adhesion. When it comes to zinc pigments, it should be taken into account that they may catalyze decomposition of VC copolymers at elevated temperatures. This also applies to iron oxide pigments.

Despite good inherent stability, for some applications it is necessary to stabilize coatings based on VINNOL® H 15/45 M against heat and/or UV light. For thermal stabilization, epoxy compounds such as epoxidized soybean oil, liquid epoxy resin or glycidyl ethers are often sufficient for low requirements.
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 compounds should be stored in coated containers.

To achieve maximum adhesion, short-term drying at high temperatures (e.g. 150 – 200°C) is usually helpful.

Additional information
The product is suitable for food contact applications.
Information regarding applicability under specific legislation in the area of food contact can be requested from our account managers and Wacker subsidiaries.
If the product is used in applications other than those mentioned, the choice, processing and use of the product is the sole responsibility of the purchaser. All legal and other regulations must be complied with.

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Packaging and storage

Packaging

VINNOL® H 15/45 M is packed in 25-kg, coated three-ply paper bags containing a polyethylene liner.

Storage

Store VINNOL® H 15/45 M under dry conditions and at room temperature (below 25 °C). If proper conditions are maintained, the product has a shelf life of at least 12 months from the delivery date if stored in the original, unopened containers. Beyond its recommended shelf life, the product is not necessarily unusable, but the user should perform quality control regarding the properties relevant to the application.

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.

QR Code VINNOL® H 15/45 M

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

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