

VINNOL® E 15/45 M TF

VINYL CHLORIDE COPOLYMER, CAS NO. 28086-69-3

Product description

VINNOL® E 15/45 M TF 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® E 15/45 M TF is a thermoplastic, physically drying binder that forms a film when the solvent contained in the formulation has evaporated.

Like all VC copolymers, VINNOL® E 15/45 M TF 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

By virtue of its carboxyl content, VINNOL® E 15/45 M TF adheres excellently to metal surfaces as well as on polymeric substrates like polyester or cellophane. It can also be used as a reactant or co-binder in two-pack systems. For example, it may be crosslinked with isocyanates, epoxy or melamine resins.

Application

Typical applications for VINNOL® E 15/45 M TF:

- Metallic paints
- Paper and film coatings
- Printing inks
- Masonry paints

Processing

VINNOL® E 15/45 M TF is generally used in dissolved form.

Ketones and esters are the solvents most commonly used for VINNOL® E 15/45 M TF, ketones being more efficient than esters.

Of the chlorinated hydrocarbons, methylene chloride

and 1,2-dichloroethane are true solvents, while tri- and tetrachloroethene have only a swelling effect.

Alcohols and aliphatic hydrocarbons do not dissolve VINNOL® E 15/45 M TF. Aromatic hydrocarbons may be combined to a limited extent with true solvents.

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

VINNOL® E 15/45 M TF is fully compatible with all other VINNOL® surface coating resins. It also combines well with many acrylic polymers and ketone resins, as well as with some epoxides. Alkyd resins, nitrocellulose, polyvinyl acetates and polyvinyl butyrals are in general incompatible with VINNOL® E 15/45 M TF.

We recommend always checking the compatibility of VINNOL® E 15/45 M TF with the polymer in question.

The compatibility of VINNOL® E 15/45 M TF with pigments or colorants must be checked in preliminary tests. Certain pigments/colorants may produce thixotropic effects and/or impair adhesion. 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® E 15/45 M TF 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 compounds should be stored in coated containers.

Storage

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

Additional information

VINNOL® E 15/45 M TF can be used for applications with food contact in compliance with FDA 21 CFR

§175.105 and §175.300. However, those coatings may only be up to an application weight of 5g/m² for metal substrates.

Comprehensive information regarding evaluation with respect to other food contact regulations may be requested from our account managers and Wacker subsidiaries.

If VINNOL® E 15/45 M TF is used in applications other than those mentioned, the choice, processing and use of VINNOL® E 15/45 M TF 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. They are available on request from WACKER subsidiaries or may be printed via WACKER web site <http://www.wacker.com>.

Product data

Specification data	Inspection Method	Value
Chlorine content	specific method	47,1 - 48,3 wt. %
K-value	DIN EN ISO 1628-2	44 - 46
Acid number / saponification number	specific method	6 - 8 mg KOH/g
Volatiles	specific method	< 0,5 wt. %
Viscosity ¹⁾ (20% solids in MEK)	DIN 53015 (20°C)	35 - 45 mPa*s
Typical general characteristics	Inspection Method	Value
Efflux time (20% in MEK)	DIN EN ISO 2431 (4 mm)	approx. 34 s
Supply form	Visual	white granulate with some powder
Particle size	specific method	< 2,5 mm
Bulk density	DIN EN ISO 60	approx. 510 kg/m ³
Density	DIN 66137-2	1,38 g/cm ³
Glass transition temperature	DSC (DIN 53765 / ISO 11357-5)	approx. 73 °C
Molecular weight (M _w)	SEC, PS-Standard	50000 - 60000

¹⁾ after dissolving at 50°C

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