

DuPont™ Elvanol® 90-50

POLYVINYL ALCOHOL

Product Data Sheet

Description

Elvanol® 90-50 is a fully hydrolyzed polyvinyl alcohol (PVOH) designed to provide high film strength and binding power in relatively low viscosity systems.

Typical Properties of Elvanol® 90-50

Viscosity, cps ¹	11.6-15.4
Solution, pH	5.0-7.0
Volatiles, wt., % max.	5.0
Ash, wt. % max. ²	0.70

¹ Viscosity in mPa.s (cP) of a 4% solids aqueous solution at 20°C (68°F)
² Dry basis, calculated as % Na₂O

Resin Characteristics

This polyvinyl alcohol provides tensile and adhesive strength approaching that of the medium viscosity, fully hydrolyzed commercial grade, Elvanol® 71-30. Elvanol® 90-50 permits higher solids solutions at a given viscosity and temperature, or lower solution viscosities at the same solids content and temperature as compared with Elvanol® 71-30.

The viscosity vs. concentration and viscosity vs. temperature characteristics of Elvanol® 90-50 are compared in Figures 1 and 2, respectively.

Figure 1. Viscosity vs. Concentration

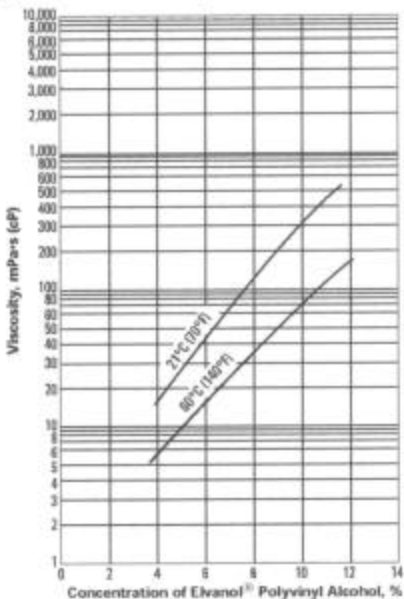
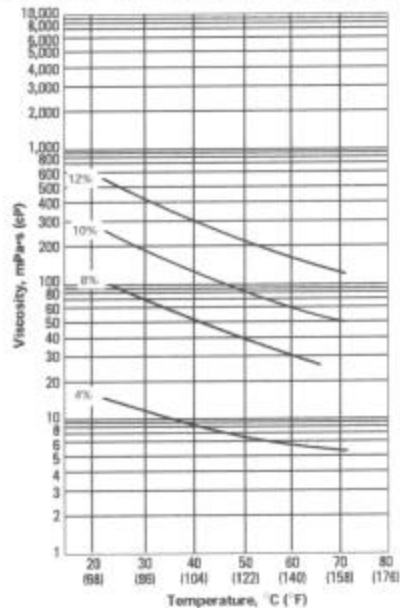


Figure 2. Viscosity vs. Temperature



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Suggested Uses

Elvanol® 90-50 is suggested for evaluation wherever the high film strength and oil, grease, and solvent resistance associated with higher viscosity, fully hydrolyzed polyvinyl alcohols are desired, but a lower solution viscosity is needed. For example, it should be useful in such applications as paper coating and sizing, adhesives for porous substrates including paper and paperboard, hot-water-soluble film, and as a binder for pigments or other solid particles. Elvanol® 90-50 is particularly useful as a pigment binder for ceiling tile primers.

FDA Status

Elvanol® 90-50 polyvinyl alcohol complies with U.S. Food and Drug Administration (FDA) Regulations under the following Sections of Title 21 CFR, and may be used in contact with food, subject to the limitations and requirements therein:

- 175.105 - Adhesives
- 175.300 - Resinous and polymeric coatings ⁽¹⁾
- 175.320 - Resinous and polymeric coatings for polyolefin films ⁽²⁾
- 176.170(b) - Components of paper and paperboard in contact with aqueous and fatty foods ⁽³⁾
- 176.180 - Components of paper and paperboard in contact with dry food ⁽⁴⁾
- 177.1200 - Cellophane
- 177.1670 - Polyvinyl alcohol film ⁽⁵⁾
- 177.2260 - Filters, resin-bonded ⁽⁶⁾
- 177.2800 - Textiles and textile fibers ⁽⁷⁾

(1) Subject to the finished food-contact article meeting the extractive limitations under the intended conditions of use, as shown in paragraph (c).

(2) For use only as a dispersing agent at levels not to exceed 6 percent of total coating weight in coatings for polyolefin films provided the finished polyolefin films contact food only of Types V, VII and IX (identified in 21 CFR 176.170(c), Table 1), subject to the finished food-contact article meeting the extractive limitations under the intended conditions of use, as shown in paragraph (c).

(3) Subject to the finished food-contact surface of the paper or paperboard meeting the extractive limitations under the intended conditions of use, as shown in paragraph (c) of the Regulation.

(4) As a component of the uncoated and coated food-contact surface of paper and paperboard in contact with dry food (Food Type VIII, identified in 21 CFR 176.170(c), Table 1).

(5) In the preparation of polyvinyl alcohol film that may be used in contact with food of Types V, VIII and IX (identified in 21 CFR 176.170(c), Table 1), provided the food-contact film in contact with food Types V or IX is subject to the finished food-contact surface of the paper or paperboard meeting the extractive limitations under the intended conditions of use, as shown in paragraph (b) of the Regulation. The finished food-contact film shall not be used as a component of food containers intended for use in contact with water.

(6) Subject to the finished resin-bonded filter meeting the extractive limitations under the intended conditions of use, as shown in the Regulation. In accordance with good manufacturing practice, finished filters should be thoroughly cleansed prior to their first use in contact with food.

(7) For use in textiles and textile fibers that may be used as articles or components of articles in contact with dry food (Food Type VIII, identified in 21 CFR 176.170(c), Table 1).

Safety & Handling

Read and understand the Materials Safety Data Sheet (MSDS) before using this product. Elvanol® is technical quality polyvinyl alcohol. It is not recommended for inclusion in any food or preparation that might be taken internally.

Under certain conditions of use, dust may be formed from Elvanol® polyvinyl alcohol. DuPont recommends that dust from Elvanol® be treated as a nuisance dust, which is regulated by the Occupational Safety and Health Administration (OSHA) under Title 29, Code of Federal Regulations, Section 1910.1000. Under this section, an employee's exposure to nuisance dust shall be limited to 15 milligrams per cubic meter (mg/m³) of total dust and 5 mg/m³ of respirable dust on a time-weighted average in any 8-hour shift of a 40-hour week.

The DuPont limit for polyvinyl alcohol exposure to nuisance dust is 10 mg/m³, and for respirable dust is 5 mg/m³. If excessive concentrations of dust are encountered, a mask or respirator and goggles should be worn. The mask or respirator should comply with Section 1910.134 of the OSHA regulations; the goggles should comply with Section 1910.133.

For bulk storage and handling of Elvanol® (e.g. storage silos) refer to *Elvanol® Bulk Storage and Handling Safety Guide*.

Elvanol® may be disposed of by incineration or landfill. However, any disposal method must be in compliance with all applicable local, state and federal regulations.

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