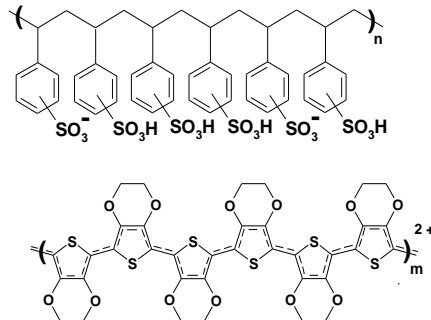


CLEVIOS™ F PVA

Chemical Formula



Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate)

Description of Product

Aqueous dispersion of Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate), containing organic solvents and polymeric binders, blue liquid

min. **max.** **Unit**

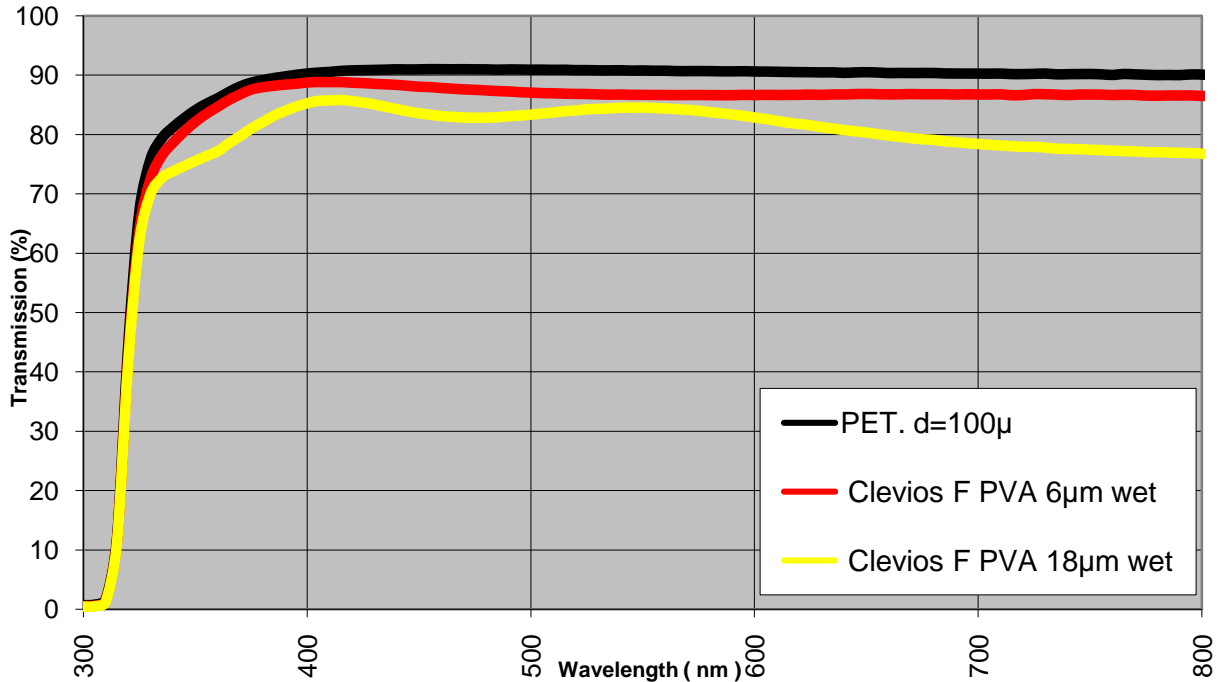
Physical Characteristics¹

Viscosity	150	200	mPas at 20°C 100 sec ⁻¹
Solid content	3.8	4.3	%

Technical Data (guide values, not a specification)

Wet thickness 6 µm		25000	Ohm/sq
Wet thickness 18 µm		3000	Ohm/sq
pH value	3.5	4.5	
Density		1.017	[g/cm ³]

Transmission - Clevios F PVA



CLEVIOS™ F PVA coatings show excellent ESD behaviour. Additionally coatings on thermoformable films like amorphous polyester can be thermoformed without loss of the ESD properties.

Dried CLEVIOS™ F PVA coatings based on 12 µm and 18 µm wet film thickness were investigated by the RMV Testing Services, Clayton US.

The testresults according to different ASTM Methods before and after thermoforming are summarised in the list and table 1.

CLEVIOS™ F PVA coated amorphous Polyesterfilms.

Wet film thickness of CLEVIOS™ F PVA 12 µm and 18 µm.

MATERIAL SPECIFICATIONS

STATIC DECAY:

- I. Standard: Rate of decay shall be less than 2.0 seconds
- II. Found: Average of 0.0817 seconds @ 12% R.H. 73°F
- III. Method: Mil-B-81705; Fed-STD-101, Method 4046 (Modified)

SURFACE RESISTANCE:

- I. Standard: $<1.0 \times 10^{11}$ ohms, ANSI/ESD S541-2003
- II. Found: $1.1 \times 10^3 - 5.61 \times 10^3$ ohms
- III. Method: ANSI/ESD STM11.11-2001

2-POINT RESISTANCE:

- I. Standard: $<1.0 \times 10^{11}$ ohms, ANSI/ESD S541-2003
- II. Found: $1.0 \times 10^4 - 2.48 \times 10^5$ ohms
- III. Method: ANSI/ESD STM11.13-2004

VOLUME RESISTANCE:

- I. Standard: $<1.0 \times 10^{11}$ ohms, ANSI/ESD S541-2003

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- II. Found: $9.8 \times 10^4 - 4.6 \times 10^7$ ohms
- III. Method: ANSI/ESD STM11.12-2000

RESIDUAL CHARGE RETENTION (non contact):

- I. Requirement: Less than +/-200 volts per ANSI/ESD S20.20-1999
- II. Found: Passed at Peaks of 14 and -37 volts
- III. Reference: ESD Adv. 11.2-1995 [Modified for non contact voltage]

RESIDUAL CHARGE RETENTION (contact):

- I. Requirement: Less than +/-200 volts per ANSI/ESD S20.20-1999
- II. Found: Passed at Peaks of 0.8 and -0.7 volts
- III. Reference: ESD Adv. 11.2-1995 [Modified for contact voltage]

ESD INSIDE SHELF LIFE:

- I. Requirement: 5 Years
- II. Found: Indefinite
- III. Reference: Contains no antistats

Since different levels of ESD protection are required for different devices, all users should perform their own tests to prove the suitability of this material for specific applications. User assumes all liability regarding damage or loss arising from use of products. User shall determine the applications of these materials for intended application, and assumes total liability in the event of aforementioned damages.

Summary of Results

Product	ANSI/ESD STM11.11-2001	ANSI/ESD STM11.12-2000	ANSI/ESD STM11.13-2003	Fed Std 101C, Mtd 4046 (Modified)	Non Contact Voltage Measurement	Faraday Cup	Contact Voltage Measurement
CLEVIOS™ F PVA 18 µm (flat sheet)	Passed	Passed	NA	Passed	NA	Passed	NA
CLEVIOS™ F PVA 18 µm (thermo-formed)	NA	Passed	Passed	Passed	Passed	Passed	Passed
CLEVIOS™ F PVA 12 µm (flat sheet)	Passed	Passed	NA	Passed	NA	Passed	NA
CLEVIOS™ F PVA 12 µm (thermo-formed)	NA	Passed	Passed	Passed	Passed	Passed	Passed

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Storage and Handling Avoid freezing!

Storage and handling are subject to the rules and regulations in the country of use. When stored at temperatures between 5°C and a maximum of 30°C, CLEVIOS™ F PVA will remain stable for 6 months from date of production in sealed original containers. After opening the containers must be well closed to prevent the evaporation of water which may result in the formation of a non re-dispersible film. The product is sensitive to frost and should therefore not be stored at temperatures below 5°C. The product cannot be used if it has been frozen. Brief heating to max . 50°C has no adverse effect on product properties.

Hazards identification See material safety data sheet.

Documentation An inspection document in accordance with EN 10204 is supplied with every commercial order. Inspection documents for samples are supplied on request.

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Note: **PRELIMINARY SPECIFICATION** (The product described is still under test. Amendments of all technical data are possible. Special care has to be taken while processing.)

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