

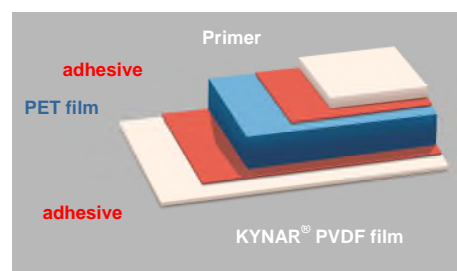
# AKASOL® PVL 455

## KYNAR® + Polyester + Primer

### General

**AKASOL® PVL 455** is a KREMPEL laminate consisting of 25µm white KYNAR® PVDF film and polyester film. It has been developed for the specific application as a backsheet of a Photovoltaic Module which minimum requirements are described in the International Standard IEC 61730-1.

Electrical, mechanical and optical properties of **AKASOL® PVL 455** remain at high level when exposed to UV radiation or to rough combined temperature/humidity conditions (e.g. 2000 h, 85%rh, 85°C). The **UV stabilized**, white Primer of PVL 455 gives improved adhesion to the encapsulating polymer.



KYNAR® PVDF film is a polyvinylidene fluoride film from ARKEMA

All tests including accelerating tests are performed on plain back sheet.

### Required properties in accordance to IEC 61730-1

Property	Unit	Test method	Results	Testing laboratory
Maximum system voltage (in air)	V <sub>DC</sub>	IEC 60664-1	1078	VDE, Offenbach
UV resistance (UVA 340nm)	-	EN 4892-3	Passed <sup>1)</sup>	KREMPEL
UV resistance (Xenon arc)	-	UL 746C	Passed <sup>2)</sup>	JET
Flame spread index	-	ASTM E 162	67	TÜV Rheinland® LGA
- tested without primer layer	-	ASTM E 162	9.9	TÜV Rheinland® LGA
Relative Thermal Index (RTI)	°C	IEC 60216-5	128	TÜV Rheinland® LGA
Relative Thermal Index (RTI)	°C	UL746B	140 <sup>3)</sup>	UL, JET

1) 2000h UV exposure with 0.68 W/m<sup>2</sup> at 340 nm; 60°C; 500 min. wetting; 1000h condensation. Total exposure time 3000h. Tested on air side and Primer side.

2) 1000h UV exposure acc. UL746C (Xenon-arc), flammability not reduced, retention of tensile strength and impact of min. 70%.

3) RTI tested as electrical temperature rating of KYNAR®. Mechanical temperature rating is 150°C.

### Certificates



AKASOL® PVL455 is an UL Recognized Component (File QIHE2.E312459).



AKASOL® PVL455 has TUVdotCOM certification ID0000033022 from TÜV Rheinland® LGA, certificate no.: R60103915 and



JET certification with registration no.: 1623 – C9801 – 142.



KREMPEL GmbH Quality Standards: ISO/TS 16949 (Reg.No.068224) and ISO 9001 (Reg.No.003915).

**For module retest conditions in case of replacement of PVL 2-1000V+Primer with PVL 405 please note TÜV Declaration PVL and TL180713.**

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All values stated are to be seen as typical values. We reserve the right to introduce changes within the framework of further technical development. We do not accept any obligations or liabilities in respect of this information. Status: 10/2015

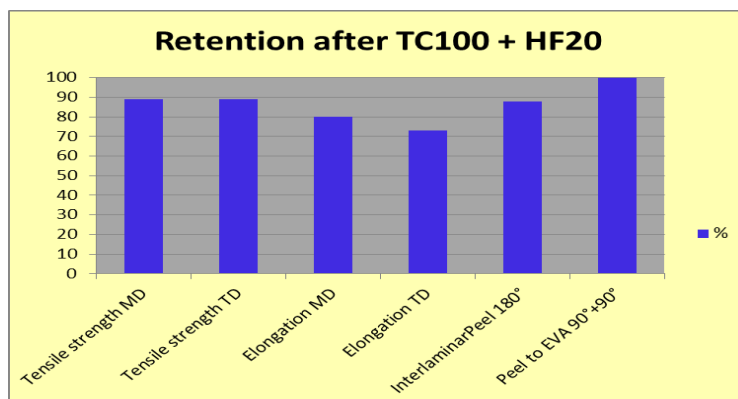
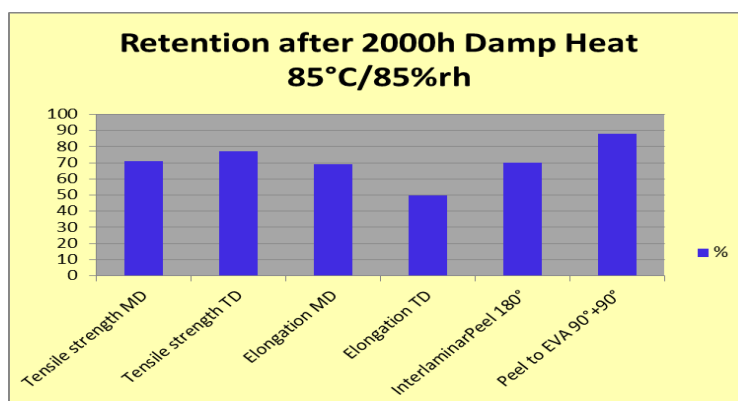
KREMPEL GmbH · Papierfabrikstrasse 4 · D-71665 Vaihingen / Enz · Tel. +49 (0) 7042 915-0 · E-mail: [info@krempele-group.com](mailto:info@krempele-group.com)

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## Additional properties not required by IEC 61730-1

Property	Unit	Test method	Typical values
Thickness	mm	EN 60674-2	0.39
Area weight	g/m <sup>2</sup>	EN 60674-2	500
Water vapour permeability 23°C/85%rh 38°C/90%rh	g/m <sup>2</sup> · d	ISO 15106-3 Test condition 4 Test condition 2	0.6 1.8
Moisture absorption	%	DIN EN ISO 62	≤ 0.4
Dimensional stability, MD + TD (30 min. / 150 °C)	%	EN 60674-2	≤ 1.2
Reflection of visible light (380 – 780nm) <sup>1)</sup>	%	EN 410	86
Reflection of visible light with white background	%	-	91
Reflection of radiation (280 – 2500nm) <sup>1)</sup>	%	EN 410	71
Volume resistivity	Ω · cm	UL 746A	10 <sup>16</sup>
Dielectric strength	kV/mm	UL 746A	58
High-current arc ignition	PLC	UL 746A	1

1) Tested at Primer side = cell side; direct solar radiation. Test equipment: Perkin Elmer Lambda 900 (Ulbrichtkugel) Tested at Fraunhofer ISE, Freiburg, Germany



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