

➔ **UNITAPE 136 Wp thin-film laminate**

Solar power system for:  
 large-scale roofing – flat roofing – lightweight roofing

- ➔ 136 Watt a-Si thin-film laminate
- ➔ flexible, self-adhesive (for full-surface adhesion)
- ➔ suitable for bitumen roofing, sheet metal roofing, plasticiser-free foil roofing and other surfaces
- ➔ for all roof angles as well as unfavourable alignments
- ➔ high-grade UNI-SOLAR® laminate
- ➔ triple junction technology utilises three spectral light ranges and delivers higher returns despite:
  - ➔ ... low light
  - ➔ ... high temperatures
  - ➔ ... partial shadow
  - ➔ ... flat surface installation



**High Performance**  
 UNI-SOLAR® thin-film cells



**Flexible and Lightweight**  
 self-cleaning, non-glass



**Easy to Install**  
 simply remove backing foil and adhere, no substructure



## Technical Data UNITAPE

### Electrical Specifications

	STC	NOCT
Maximum Nominal Power ( $P_{MPP}$ )	136 Wp	105 Wp
Voltage at Pmax ( $U_{MPP}$ )	33,0V	30,8V
Current at Pmax ( $I_{MPP}$ )	4,1 A	3,42 A
Short Circuit Current ( $I_{sc}$ )	5,1 A	4,1 A
Open Circuit Voltage ( $U_{oc}$ )	46,2V	42,2V
Maximum Series Fuse Rating	8 A	8 A

Electrical specifications ( $\pm 5\%$ ) after stabilisation. The actual output can vary up to 10% from the nominal values due to low temperatures, spectral fluctuation and other influences. During the first 8 to 10 weeks of operation the electrical parameters may exceed the values specified by the following values:

- Power PMPP +15%, open circuit voltage  $U_{oc}$  +11%, short circuit current  $I_{sc}$  +4%
- 1) values per laminate, 2 laminates per module
- 2) under standard test conditions (STC = 1000 W/m<sup>2</sup>, AM 1.5, 25° cell temperature)
- 3) (NOCT = 800 W/m<sup>2</sup>, AM 1.5, 1m/sek. wind) NOCT: 46° C

### System Data

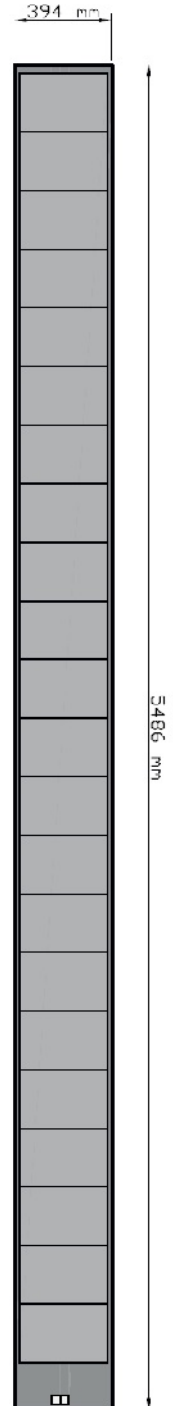
Surface	abrasion-resistant, highly light-transmissive ETFE (Tefzel®) polymer		
Solar laminate	22 triple junction amorphous silicon solar cells		
Adhesive	UNI-SOLAR® laminate 22-L TQC, parallel bypass diodes connecting every cell		
Protective foil	pressure-sensitive polymer-modified bitumen adhesive		
Dimensions	PE foil		
	length	5486 mm (variance max. $\pm 5$ mm)	
	width	394 mm (variance max. $\pm 3$ mm)	
	thickness	4.0 mm, 16.0 mm at moulded junction box	
	weight	8 kg	
	connection cable	2 x 0.5 m, high quality solar plugs, IP 65	

### Temperature Coefficients (at AM 1.5, 1000 W/m<sup>2</sup> solar irradiation)

Power output coefficient of $P_{MPP}$	-286 mW/K	(-0.21%/°C)
Voltage coefficient of $U_{MPP}$	-102 mV/K	(-0.31%/°C)
Current coefficient of $I_{MPP}$	4.1 mA/K	(0.10%/°C)
Short circuit current coefficient of $I_{sc}$	5.1 mA/K	(0.10%/°C)
Open circuit voltage coefficient of $U_{oc}$	-176 mV/K	(-0.38%/°C)

### Quality Characteristics

Production tolerance	$\pm 5\%$
Output guarantee	10 years at 92% of power output 20 years at 84% of power output 25 years at 80% of power output for registered products
Product guarantee	5 years
Max. system voltage	1000 VDC corresponding to Protection Class II per TÜV Rheinland
Certificates	IEC 61646 and IEC 61730



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