



IEC 62716 ed. 1.0

Ammonia corrosion testing of photovoltaic (PV) modules

Ref.: 5005440-3972-0001/195279

Applicant: SolarWorld AG
Martin-Luther-King-Str. 24, 53175 Bonn

Product: Crystalline silicon Photovoltaic (PV)-Modules

Type: A) Sunmodule Plus SW XXX mono Y
A) Sunmodule Plus SW XXX poly Y
B) Sunmodule SW XXX XL mono Y
B) Sunmodule SW XXX XL poly Y
C) Sunmodule Plus SW XXX Vario poly Y
C) Sunmodule Plus SW XXX Vario mono Y
D) Sunmodule Protect SW XXX mono Y
D) Sunmodule Protect SW XXX poly Y
E) Sunmodule Plus SW XXX mono Y
E) Sunmodule Plus SW XXX poly Y
F) Sunmodule SW XX poly RMA
G) Sunmodule SW XX poly RGA
H) Sunmodule SW XX poly RNA
I) Sunmodule SW XX mono RHA
J) Sunmodule SW XXX poly RIB
K) Sunmodule SW XXX poly RGP
L) Sunmodule SW XXX poly R6A

XXX / XX in the type replace the power in watt and can be any number between:

200 – 300 for A), D), E); 260 – 360 for B); 184 – 240 for C); 50 – 55 for F); 50 for G);
80 - 85 for H), I); 100 for J), K); 140 – 160 for L)

Y in the type replaces a potential suffix and can be black or clear.

Manufacturer: SolarWorld AG

Standard: IEC 62716 ed.1.0

Test conditions: As given in IEC 62716 ed. 1.0

1st test section:

| | |
|--------------------------------|----------|
| Testing time | 8 h |
| NH ₃ Concentration: | 6667 ppm |
| Chamber temperature: | 60°C |
| Rel. humidity: | 100% |





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| 2nd test section: | Testing time | 16 h |
| | NH ₃ Concentration: | 0 ppm |
| | Chamber temperature: | 25°C |
| | Rel. humidity: | 75 % |
| Total testing time | | 480 h (20 cycles) |

Pass criteria

| | |
|----------------------------------|---------------------------------------|
| Visual inspection: | No findings which may affect safety |
| Power degradation: | < 5 % |
| Dry Insulation: | > 40 MΩm ² |
| Wet insulation: | > 40 MΩm ² |
| Bonding path resistance: | < 0,1 Ω |
| Bypass diode functionality test: | Bypass diodes shall remain functional |

Summary of test results:

Visual inspection: No findings which may affect safety

Maximum power degradation: required < 5 %
measured max. 0,43 %

The measured degradation is below the allowed degradation.

Dry insulation resistance: required ≥23,81 MΩ
measured min. 500 MΩ

The measured dry insulation resistance is above the limit.

Wet insulation resistance: required ≥23,81 MΩ
measured min. 416 MΩ

The measured wet insulation resistance is above the limit.





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| Bonding path resistance: | required | < 0,1 Ω |
| | measured | max. 0,011 Ω |

The measured bonding path resistance is below the limit.

Bypass diode functionality test: Bypass diodes remain functional

The complete test results are given in the Test Reports No.:
Report_ET2_195279-1, Report_ET2_195279-2 and Report_ET2_195279-3.

VDE Prüf- und Zertifizierungsinstitut GmbH
VDE Testing and Certification Institute
Fachgebiet ET2 / Section ET2

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