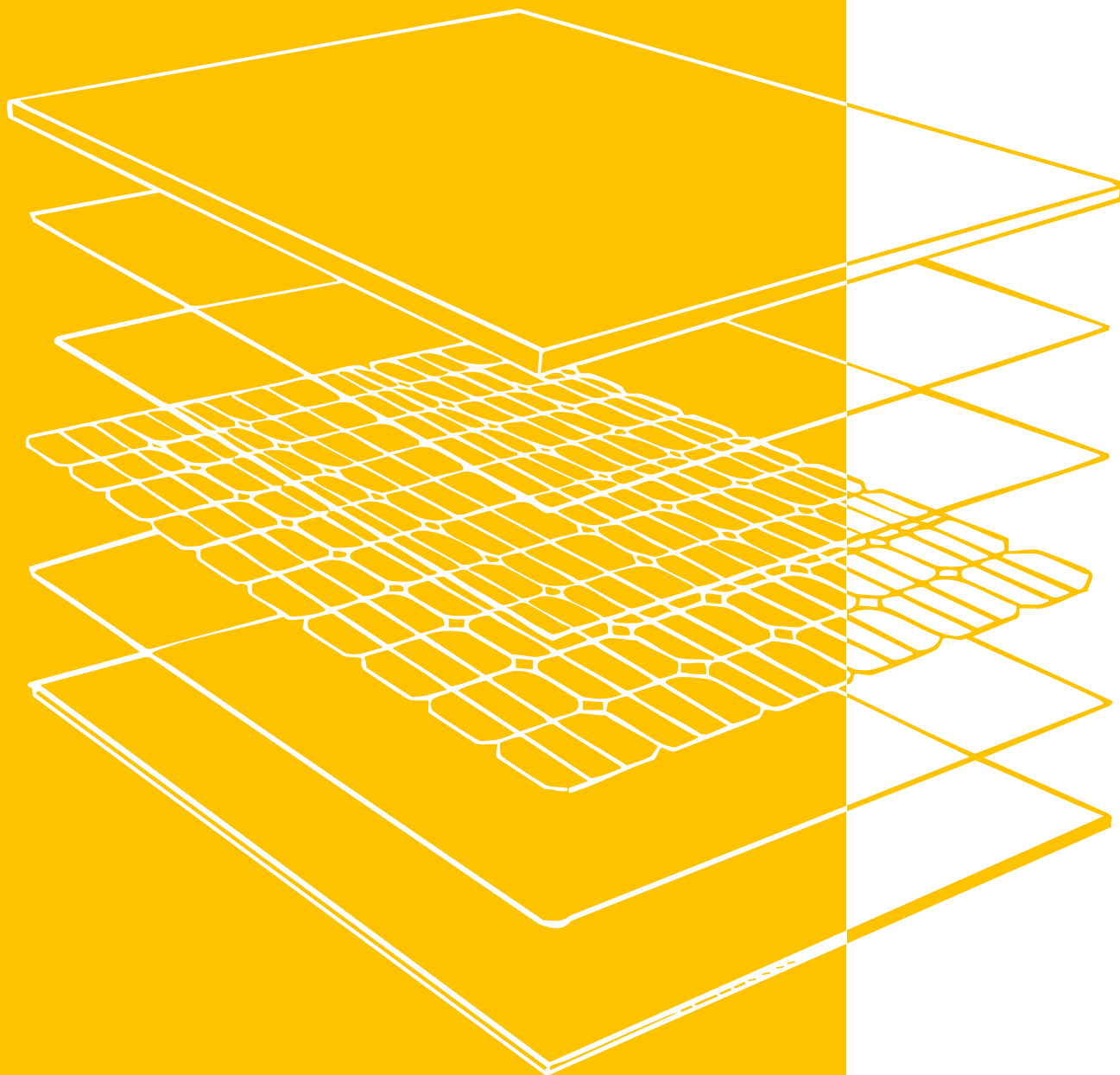


PHOTOVOLTAIC

BACKSHEET AND FRONSHEET SOLUTIONS



COVEME KEYFACTS

Coveme develops and manufactures multilayer polymer laminates for solar panels which provide electrical insulation and protect solar cells from humidity and other atmospheric agents. This guarantees the duration and correct functioning of the solar module for up to 30 years. With an **internal production capacity of 20GW** and a **25 year long experience in supplying the photovoltaic industry**, Coveme is today the most long standing supplier of backsheets and frontsheets for pv modules in the market, and the only one with **two production plants** and **three R&D hubs in Europe and Asia**.

The company's **dyMat® laminates** range offers solutions for **all types of PV modules in any installation environment**. dyMat® photovoltaic laminates feature a wide choice of **PFAS free products**, mono and multilayer structures and several output enhancing options. The use of recyclable materials as well as the offer of **recycled polyester film (rPET)** as base material are the result of specific research projects in collaboration with suppliers and scientific institutes and complete the range from a sustainable point of view. Coveme also offers a wide range of backsheets with fluorinated materials if required.

Today over **70 GW of solar panels installed** worldwide are **protected by dyMat®** PV backsheets and frontsheets confirming the guaranteed and certified product performance of Coveme's photovoltaic materials. dyMat® products are **TÜV RHEINLAND, TÜV SÜD** certified and **UL registered**.

- ✓ **20 GW** current internal production capacity
- ✓ **PFAS free** and **low carbon footprint** products
- ✓ **25 years of experience** in supplying the PV industry
- ✓ **Certified** according to latest **IEC 62788-2-1:2023**
- ✓ **70 GW of solar panels installed** worldwide protected by dyMat®
- ✓ **Bonded warehouses** in Europe, China, Turkey and USA

FRONTSHEET RANGE

CLEAR PET BASED FRONTSHEETS

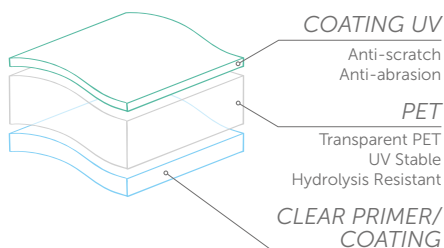
1000/
1500
VDC

dyMat® transparent frontsheets are the ideal solution to be employed instead of glass in lightweight flexible photovoltaics. They combine the properties of a high grade **UV stable polyester** film with those of a **special UV coating** applied in a hightech EB curing production process.

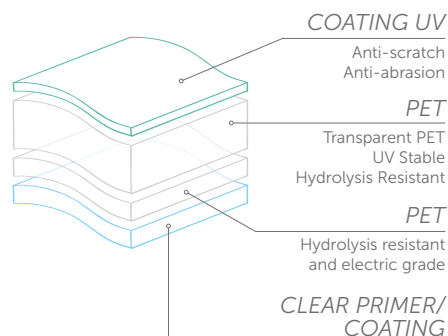
dyMat® frontsheets feature outstanding **anti-scratch and anti-abrasion properties** and can be supplied with a **matt anti-glare** finish for output enhancement and traffic safety.

- ✓ UV coating & UV resistant PET
- ✓ Matt, anti-glare for traffic safety
- ✓ Anti-scratch & anti-abrasion
- ✓ High transparency

dyMat® Clear Frontsheet Monolayer



dyMat® Clear Frontsheet Multilayer



BACKSHEET RANGE

PET BASED BACKSHEETS

1000/
1500
VDC

dyMat® PET based backsheets for 1000 V and 1500 V. The 1500 V versions feature thicker inner PET layers in order to comply with the new IEC rules for 1500 V insulation. They guarantee more than 2500 hrs Damp Heat Test (DHT), 72 hrs of PCT (HAST) and more than 400 kWh/m of UV irradiation resistance.

dyMat® PET 1500V backsheets are available in mono- or multilayer versions, and a choice of white, transparent or black colour.

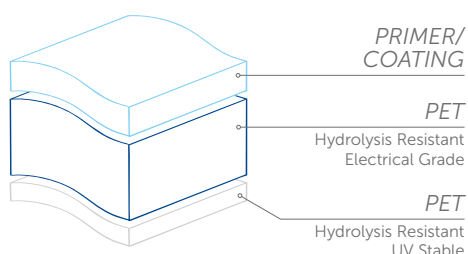
✓ Certified according to latest
IEC 62788-2-1:2023

✓ **Excellent resistance** from
atmospheric agents

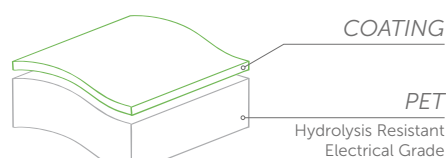
✓ Successfully **tested by Fraunhofer**
ISE with TOPCon cells

✓ Available with white, black or
black **high reflectivity coating**

dyMat® HDPYE SPV L / HDPYE SPV C



dyMat® HDPYE SPV C M



TRANSPARENT PET BASED BACKSHEETS

1000/
1500
VDC

dyMat® transparent high grade PET backsheets are employed as an alternative to glass in Bifacial modules or where transparency is required (eg. greenhouses). The polymers, primer and adhesives specifically developed for these products provide an extra high resistance to UV and humidity.

dyMat® Clear PET Backsheets are suitable for 1000 and 1500 VDC and have a proven track record being employed in the world's first bifacial 1500V installation.

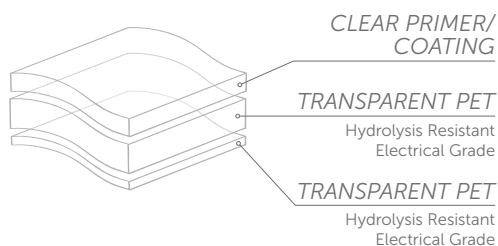
✓ Successfully tested **by Fraunhofer**
ISE with TOPCon cells

✓ **3000H DHT WITH PERC** cells
<1% POWER DROP tested by
Fraunhofer ISE

✓ Certified according to latest
IEC 62788-2-1:2023

✓ **TOPCon, XBC and PERC** cells

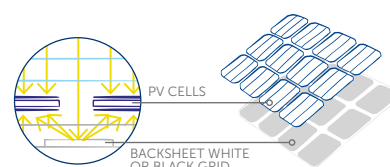
dyMat® Clr HDPYE / Clr HDPYE F



OUTPUT INCREASING OPTIONS

dyMat® Selective

Optional white or black mesh grid incorporated in the backsheet that **turns the space in between the cells and the borders into a highly reflective area** for significant output improvement. The grid layout is defined according to customer's cell shape and size.



BLACK AND SUPER HIGH REFLECTIVITY PET BASED BACKSHEETS

1000/
1500
VDC

dyMat® black and high reflectivity black backsheets for 1000/1500 VDC installations include solutions with black primer and black PET film or backsheets with monolayer or double layer backsheets with high reflectivity coating.

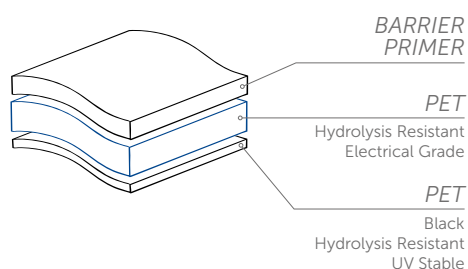
The high reflectivity feature was studied and developed by Coveme in order to balance the intrinsic light absorption of black colour.

- ✓ Innovative SHR black coating providing **reflectance >80%** and **> 5% power output**

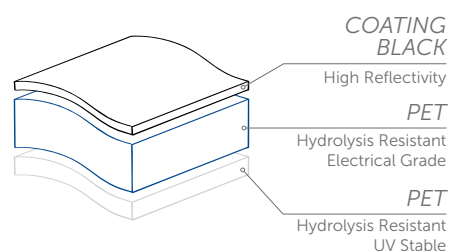
- ✓ **Aesthetically appealing** solution

- ✓ **Aluminium layer version** available

dyMat® BK HDPYE SPV L



dyMat® HDPYE SPV CBK SHR



HIGH BARRIER BACKSHEETS

1000/
1500
VDC

Coveme has developed a range of dyMat® backsheets specifically designed for hetero-junction cells, thin film (CIGS, a-Si and Perovskite), flexible and even c-Si photovoltaic modules installed near water.

The range includes both backsheets with an aluminum layer, and backsheets with a barrier film, without the aluminum layer.

- ✓ Designed for **TOPCon, HJT, XBC** and **Thin film**

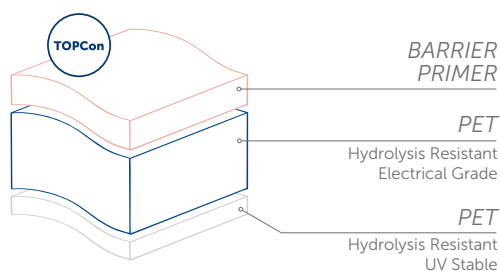
- ✓ Suitable for **floating systems** with all types of cells

- ✓ Extra **low WVTR** value

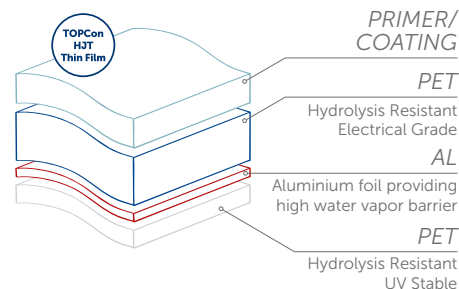
- ✓ Available in **white, black** or **transparent** versions (only barrier film without Aluminium)

- ✓ **Innovative** integrated **barrier layer** version

dyMat® HDPYE SPV LDO / Clr HPDYE LDO



dyMat® AHPYE SPV C / APYE L



SUSTAINABILITY

Coveme is well aware of its responsibility in terms of environment and social wellbeing. This is reflected not only in what we produce but also how we produce, which means a lean and green production technology and strategic partnerships with our customers and suppliers.

SUSTAINABILITY CERTIFICATIONS



ISO 14001: 2015 for environmental management



ISO 45001:2023 for health and safety at work



Ecovadis Sustainability rating

SUSTAINABLE PRODUCTS

- ✔ **PFAS free** and **low carbon footprint** backsheets
- ✔ **LCA** and carbon footprint **analysis of a backsheet** for solar panels
- ✔ Backsheets made of **recycled polyester rPET component**
- ✔ Promotion of a **circular economy project**

ACHIEVED GOALS

- ✔ Coveme group publishes **Sustainability Report** since 2023
- ✔ Calculation of **Carbon Footprint** based on **GHG protocol** for the Coveme group: **scopes 1,2,3**
- ✔ Implementation of a **Strategic Sustainability Plan** starting from 2024

SUSTAINABILITY MEASURES

- ✔ **Self-powering** and **Solvent-free** production lines
- ✔ **Packaging disposal instructions** for clients
- ✔ **Autothermal** and **regenerative processes in production**
- ✔ **Recovery and reuse** of packaging, encaps and core
- ✔ Treatment and **cleaning of harmful fumes and water**
- ✔ **Replacement of single-use plastic** materials
- ✔ **Energy production and self-consumption** through installed solar panels
- ✔ **Differentiation and recycling** of production and office waste



Coveme is certified ISO 9001: 2015 for quality management standards, ISO 14001: 2015 for environmental management and UNI EN ISO 45001:2023 for occupational health and safety.



Coveme photovoltaic products are UL registered and TÜV Rheinland and TÜV SÜD certified



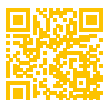
Coveme has received the Bronze Medal Ecovadis certification as the result of a corporate sustainability performance evaluation.



Coveme is IATF (International Automotive Task Force) certified as supplier to the automotive industry.



COVEME.COM



PHOTOVOLTAIC



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