

COVEME **PHOTOVOLTAIC**

2024

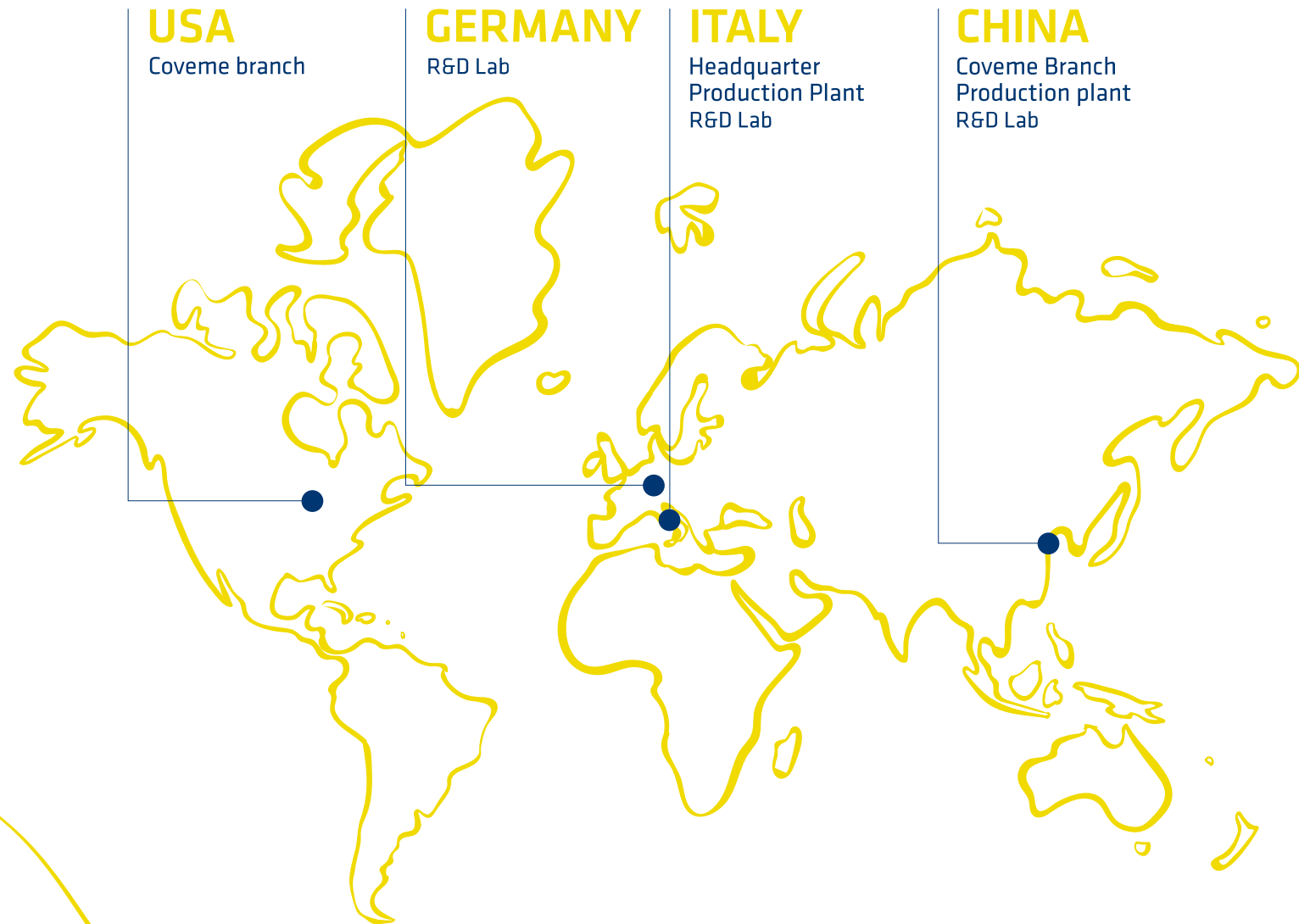
Backsheets and Frontsheets for PV modules



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COVEME TODAY



OVER 65 GW OF INSTALLATIONS WORLDWIDE IN 25 YEARS OF ACTIVITY AS BACKSHEET AND FRONTSHEET PRODUCER

- ✓ **2 PRODUCTION PLANTS**
in Europe and Asia
- ✓ **OVER 50 YEARS OF KNOW HOW**
in converting polyesterfilm
- ✓ **BONDED WAREHOUSES**
in Europe, China, Turkey and Usa
- ✓ **3 R&D HUBS**
in Italy, Germany and China
- ✓ **20 GW OF PRODUCTION**
capacity per year
- ✓ **CERTIFIED QUALITY, SAFETY AND ENVIRONMENTAL**
standards.



PRODUCTION

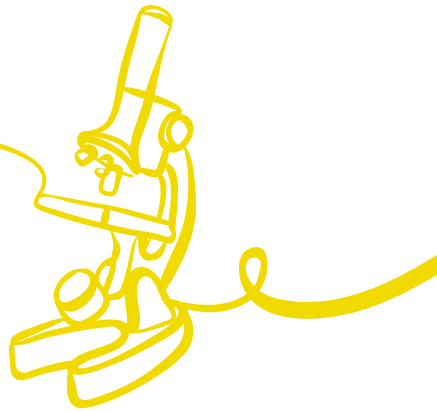
Coveme has been converting polyester film for over 20 years and has successfully developed sophisticated technologies in the production of high-tech films for various industries. Clients' specifications are defined individually and monitored throughout the whole production chain, including suppliers, logistics and service process.



- ✓ **20 GW LAMINATION AND COATING** proprietary production capacity
- ✓ **FULLY AUTOMATED** processes
- ✓ **CUSTOMIZED** rolls, sheets and **PUNCHED** formats
- ✓ **14** production lines
- ✓ **LAMINATION, SURFACE TREATMENT, HEAT STABILIZATION, COATING, SLITTING**

RESEARCH & DEVELOPMENT

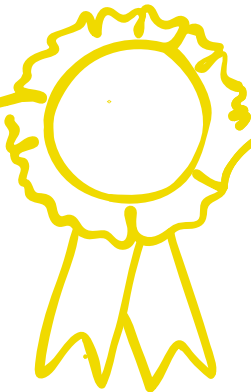
Our laboratories have always been one of the most advanced and strong points of the company, where our technological and operative know how is at complete disposal of the clients' needs. Coveme's research in photovoltaics focuses on the reliability of our products that guarantee our customers higher productivity, maximum module power output and the best cost efficiency.



- ✓ **3 R&D LABORATORIES** in Europe and Asia
- ✓ Highly **SOPHISTICATED EQUIPMENT**
- ✓ **CUSTOMIZED RESEARCH PROJECTS** for clients
- ✓ Dedicated **INNOVATION TEAM**
- ✓ Strong academic and industrial **PARTNERSHIPS**

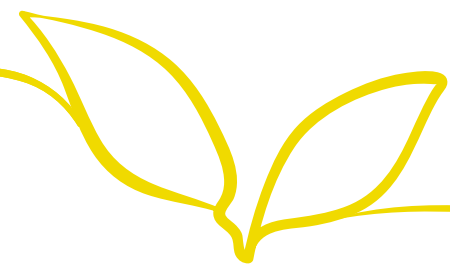
QUALITY

The choice of a quality backsheet or frontsheet is fundamental for the performance and durability of a PV module. Coveme's dyMat® products are made of specifically developed polymers, adhesives and coatings to guarantee full protection and insulation of the module during its entire lifetime. Coveme's production processes are subject to rigid and well defined quality protocols and are ISO 9001:2015 certified. 20 years of continuous investments in product and process innovation dedicated to the photovoltaic industry make Coveme the most reliable and longstanding supplier of quality materials in the market today.



- ✓ **LONG HISTORY OF HIGH QUALITY** backsheets and frontsheets
- ✓ **Guaranteed DURABILITY AND PERFORMANCE**
- ✓ **SEVERE QUALITY INSPECTION** and production control
- ✓ **CONSTANT INVESTMENT IN PRODUCT** and process innovation
- ✓ International **CERTIFIED STANDARDS** through ISO 9001:2015
- ✓ Photovoltaic products are **UL REGISTERED, TÜV RHEINLAND AND TÜV SÜD CERTIFIED**
- ✓ **IATF** certified for automotive industry

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 STANDARDS

SUSTAINABLE PRODUCTS

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

ACHIEVED GOALS

- ✓ In 2023 Coveme group published its first **Sustainability Report**
- ✓ Implementation of a **Strategic Decarbonization Plan** starting from 2024
- ✓ Calculation of **Carbon Footprint** based on **GHG protocol** for the Coveme group: **scopes 1,2,3**

SUSTAINABILITY MEASURES

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

OUR GREEN SOLUTIONS

For its clients in the photovoltaic industry Coveme's roadmap of green solutions starts from polyester-based back- and frontsheets suitable of the most virtuous disposal and latest recycling technologies, offers module manufacturers - unique on today's market - backsheets made of recycled polyester film, and last but not least sees the company's continuous investments and investigations in EOL and LCA studies in order to promote a circular economy model.



1. DYMAT® GREEN PRODUCT

The polyester film inside dyMat® backsheets and frontsheet have more sustainable end-of-life (EOL) possibilities, compared to fluorinated products for which the only viable disposable method is landfill. dyMat® PET based backsheets meanwhile can be disposed of in different ways:



INCINERATION: during the combustion process new energy is generated but there are still risks of toxic substances being release into the environment.



PYROLYSIS: during this more virtuous process new electricity and also new fuel are generated.



MONOMER RECYCLING: at the end of their life cycle the backsheets undergo a recycling process bring the PET back into a monomer state which can then be repolymerized to become recycled polyester (rPET). See chapter 3: dyMat® Circular economy project.

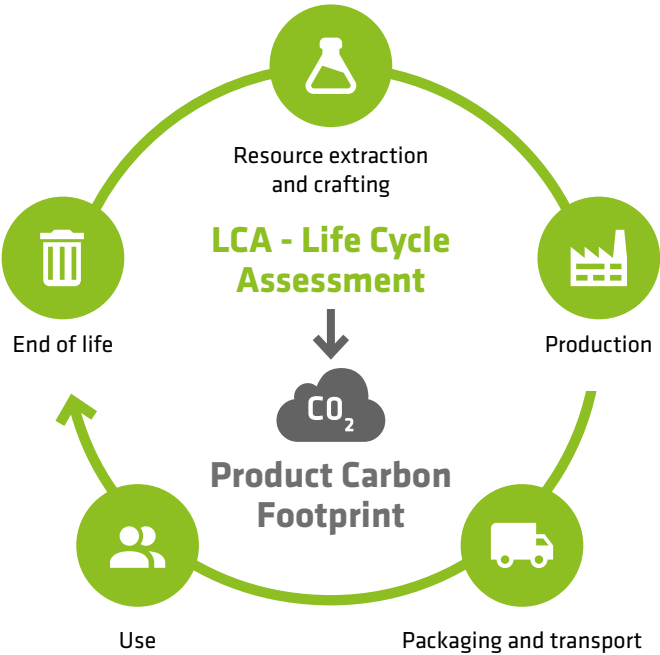
2. DYMAT® ECO RECYCLED PRODUCT

dyMat® ECO is a revolutionary range of backsheets composed of 33% recycled polyester (rPET) . This rPET derives from an innovative upcycling process in which post-consumer plastic waste (plastic bottles, food trays, caps, etc) is processed for the production of rPET.

dyMat® ECO for 1000 or 1500 VDC are the very first backsheets made with rPET available on the market today and has the same guaranteed performances as Coveme standard products.

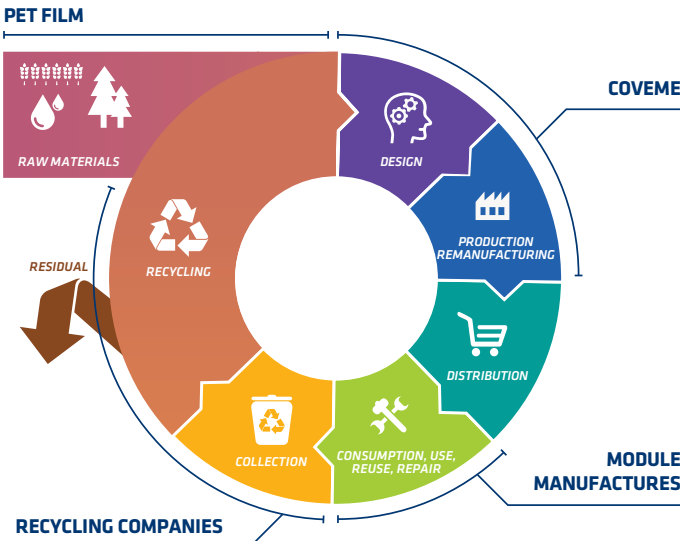
3. LCA AND CARBON FOOTPRINT STUDY ON DYMAT® PYE BACKSHEET

Coveme promoted the study of the carbon footprint through the LCA analysis (life cycle assessment) of dyMat® HDPYE SPV L. The study on the LCA of dyMat® HDPYE SPV L will demonstrate that the amount of CO2 generated during the life cycle of a PET-based backsheet is much lower than that containing a fluorinated material. If this study were carried out on a backsheet containing rPET, the amount of CO2 generated would clearly be even lower, precisely due to the nature of the origin of the recycled PET.



4. DYMAT® CIRCULAR ECONOMY PROJECT

Coveme, in collaboration with important international partners, has studied the feasibility of a circular process for the recovery of the PET based Backsheet at the end of life of the solar module:



PHASES OF THE PILOT PROJECT:

1. The backsheet and the encapsulant were separated through mechanical processes of delamination of the various layers through successive steps of surface abrasion.
2. Through a process of glycolysis the pure BHET was separated and recovered. The BHET constitutes the starting monomer for the production of PET.
3. The BHET monomer was subsequently repolymerized to become recycled polyester (rPET): this process is called monomer recycling.

This pilot project was successfully carried out and completed, proving that it is possible to implement a circular economy process on the backsheet used inside the photovoltaic module.

COVEME PHOTOVOLTAIC DIVISION

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 material, 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 65 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.

- ✓ **BACKSHEET AND FRONTSHEET SOLUTIONS** for any module type
- ✓ **25 YEARS OF EXPERIENCE** in supplying the PV industry
- ✓ **20 GW** current internal **PRODUCTION CAPACITY**
- ✓ **65 GW OF SOLAR PANELS INSTALLED** worldwide protected by dyMat®
- ✓ **BONDED WAREHOUSES** in Europe, China, Turkey and USA
- ✓ **PFAS FREE AND LOW CARBON FOOTPRINT** products

dyMat® OVERVIEW

BACKSHEETS AND FRONTSHEETS FOR PV MODULE SOLUTIONS

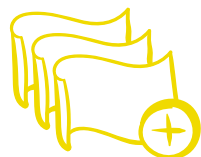
FUNCTION



DYMAT® BACKSHEETS AND FRONTSHEETS ARE EFFICIENT MATERIAL COMBINATIONS FOR HIGHLY PERFORMING MODULES:

- Electrical insulation **UP TO 1500 VDC**
- STRONG UV** protection
- HIGH HUMIDITY RESISTANCE**
- CHEMICAL AND PHYSICAL** durability

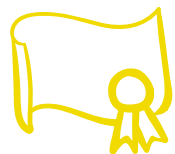
ADDED VALUE



DYMAT® IS A VAST RANGE OF DIFFERENT MATERIALS FOR A TOTALLY CUSTOMIZABLE BACKSHEET AND FRONTSHEET:

- POLYESTER AND FLUORINATED** based versions
- MONO AND DOUBLE LAYER** solutions
- EXTENDED LIFE TIME** up to 30 years available
- TRANSPARENT VERSIONS** as alternative for glass
- LARGE RANGE OF WIDTHS** for rolls and sheets
- PFAS FREE, LOW CARBON FOOTPRINT, RECYCLABLE AND rPET VERSION**

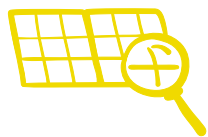
QUALITY



DYMAT® PRODUCTS ARE CERTIFIED BY THE WORLD'S MAJOR CERTIFICATION BODIES:

- TÜV RHEINLAND CERTIFIED** 
- TÜV SÜD CERTIFIED** 
- UL REGISTERED** 

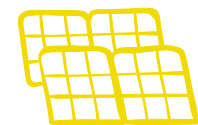
MODULE & CELLS TECHNOLOGIES



DYMAT® SOLUTIONS SATISFY THE SPECIFIC REQUIREMENTS OF ALL KIND OF MODULE TYPES:

- BIFACIAL**
- THIN FILM**
- TOPCon**
- SEMI-FLEXIBLE**
- PERC**
- HJT**

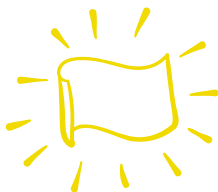
APPLICATIONS



DYMAT® BACKSHEETS AND FRONTSHEETS ARE SPECIFICALLY DESIGNED FOR DIFFERENT TYPES OF INSTALLATION IN UTILITY AND DISTRIBUTED GENERATION:

- UTILITY POWER PLANTS**
- RESIDENTIAL ROOFTOP**
- COMMERCIAL AND INDUSTRIAL** buildings
- FLOATING SYSTEMS**
- BUILDING INTEGRATED** photovoltaics
- Integrated PV in **AUTOMOTIVE AND NAUTICAL**

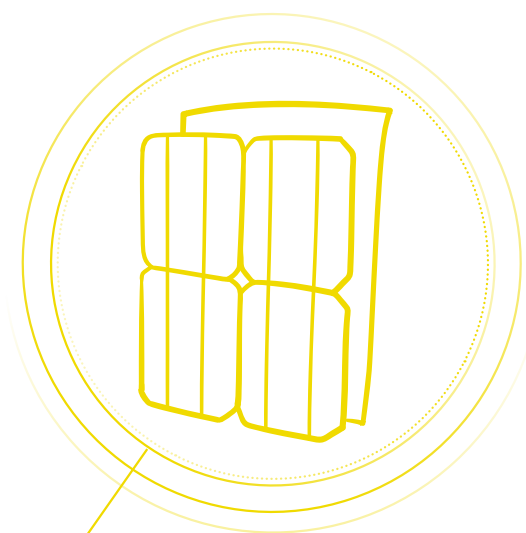
EXTRA PERFORMANCES



COVEME DEVELOPS MATERIALS WITH HIGHLY INNOVATIVE FILMS AND COATINGS FOR LEADING-EDGE APPLICATIONS:

- HIGH BARRIER** Backsheets
- Black or white **SELECTIVE MASH GRID.**
- BLACK HIGH REFLECTIVITY** Backsheets

PRODUCT RANGE



16 PET BASED BACKSHEETS

- 17 Best Selling Products
- dyMat® Clr HDPYE/F
 - dyMat® HDPYE SPV L/C
 - dyMat® PYE MONO CBK HR
 - dyMat® APYE L/C

18 WHITE PET BASED BACKSHEETS

- 19 dyMat® Backsheet for Utility
- dyMat® HDPYE SPV L
 - dyMat® HDPYE SPV C
 - dyMat® HDPYE SPV C M

20 WHITE AND BLACK PET BASED BACKSHEETS

- 21 dyMat® Backsheet for Distributed Generation
- dyMat® PYE MONO C
 - dyMat® PYE SPV - SPV L
 - dyMat® PYE SPV C

22 CLEAR PET BASED BACKSHEETS

- 23 dyMat® Backsheet for Bifacial PV
- dyMat® Clr HDPYE F
 - dyMat® Clr HDPYE
 - dyMat® Clr HDPYE LDO
 - dyMat® Clr MONO/C

24 BLACK HIGH REFLECTIVITY PET BASED BACKSHEETS

- 25 dyMat® Backsheet for Distributed Generation
- dyMat® HDPYE SPV CBK HR
 - dyMat® PYE MONO CBK HR
 - dyMat® BK HDPYE SPVL/CBK HR

26 HIGH BARRIER PET BASED BACKSHEETS

- 27 dyMat® Backsheets for HJT, TOPCon and thin film
- dyMat® HDPYE SPV LDO
 - dyMat® HDPYE SPV LDO/M
 - dyMat® AHDPYE SPV P/C
 - dyMat® APYE L

28 TEDLAR® BASED BACKSHEETS

- 29 dyMat® Backsheets White and Clear
- dyMat® Clr TsF 285
 - dyMat® TsF 285

30 PVDF® BASED BACKSHEETS

- 31 dyMat® Backsheets White and Clear
- dyMat® Clr KF 285
 - dyMat® KF 285

32 FRONTSHEETS CLEAR PET BASED

- 33 dyMat® Frontsheets
- dyMat® Clr FS HDPYE
 - dyMat® Clr FS PYE MONO

34 DYMAT® SPECIALTIES

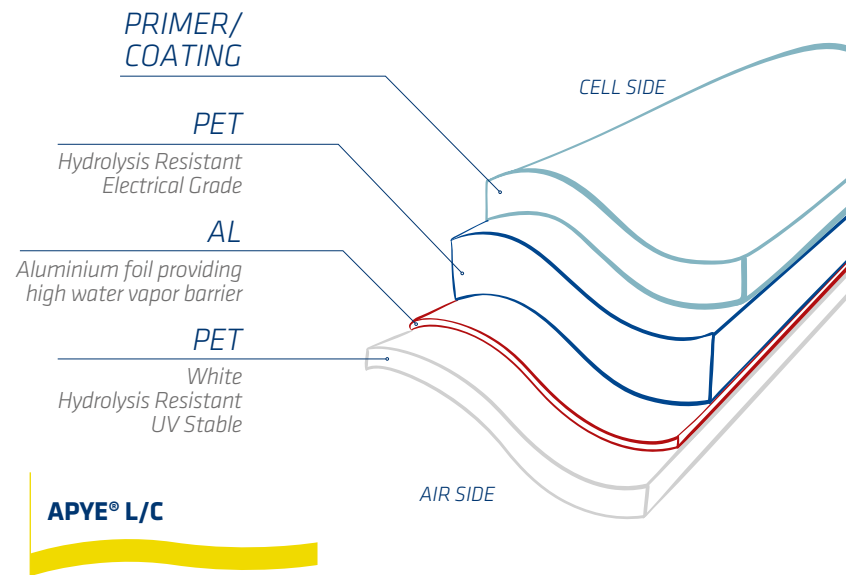
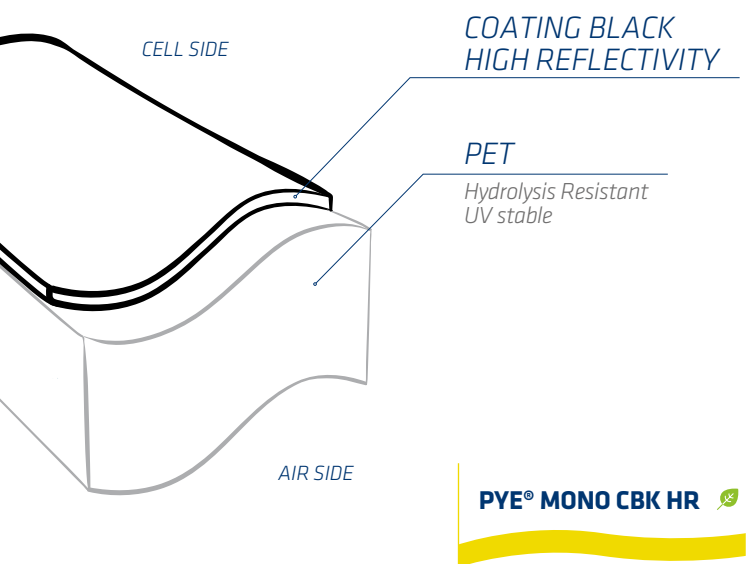
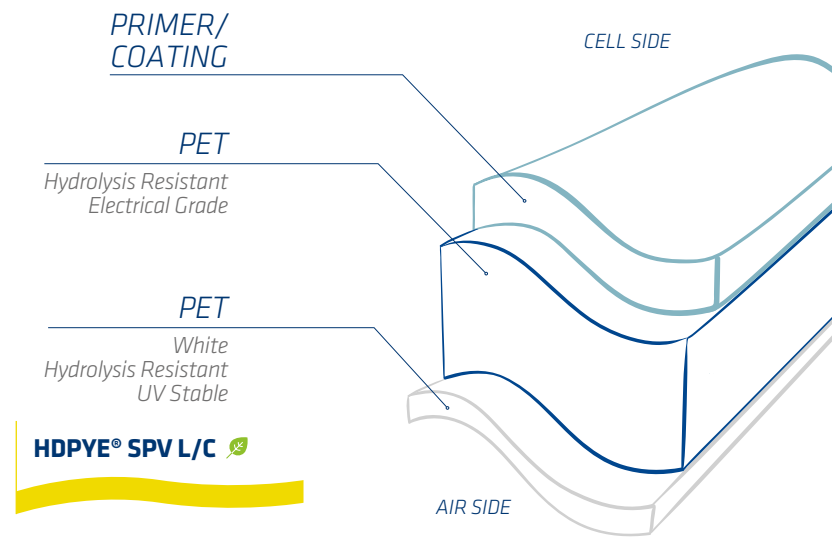
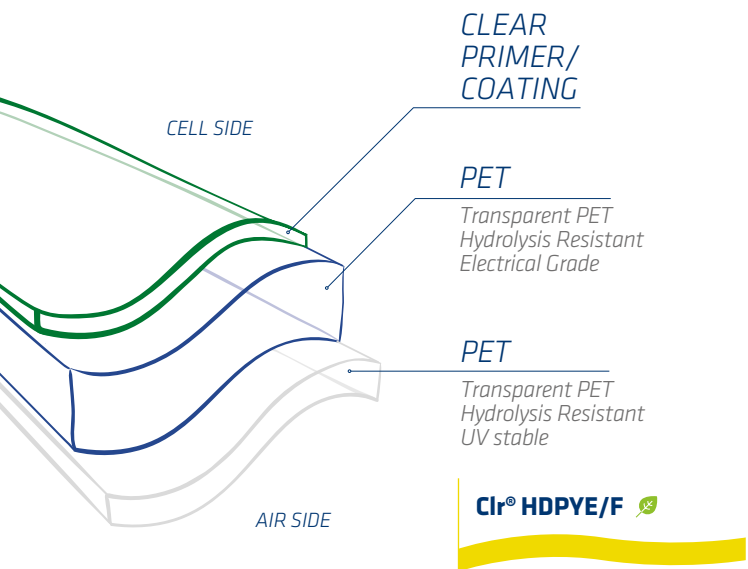
- 35 dyMat® for Flexible, Printed and Organic PV

36 DYMAT® ACCESSORIES

- dyMat® EPE
- dyMat® E

PFAS free, low carbon footprint, recyclable and rPET

PET BASED BACKSHEETS



BEST SELLING PRODUCTS

Coveve's most selling backsheets for 1000/1500 VDC installations feature a special high-grade PET able to guarantee more than DHT 2500 hrs, PCT(HAST) 72 hrs and more than 400 kWh/m2 of UV irradiation resistance. They are specifically designed for PERC, TOPCon, HJT cells and Thin film. Additionally, the dyMat® range provides a high adhesion strength to all types of encapsulants, excellent resistance to sand, salt mist, ammonia and chemical solvents corrosion. The mono layer version features superior resistance to UV and hydrolysis thanks to its bulk technology and shows excellent performances in the combined UV+DHT tests together with an intrinsic high reflectivity. Coveve's Aluminum backsheet version, with a special special Al layer inside, guarantees an extra low WVTR and a superior moisture protection for humidity sensitive cells and installations near water. dyMat® range is available in white or black PET, furthermore they are also available with the 33% of recycled PET 🌱.

Extra UV protection

Bifacial Cells

Totally Transparent

CIR® HDPYE/F

Low WVTR

Record selling product

HDPYE® SPV L/C

Mono layer

Black high reflective coating

PYE® MONO CBK HR

Extra Low WVTR

APYE® L/C

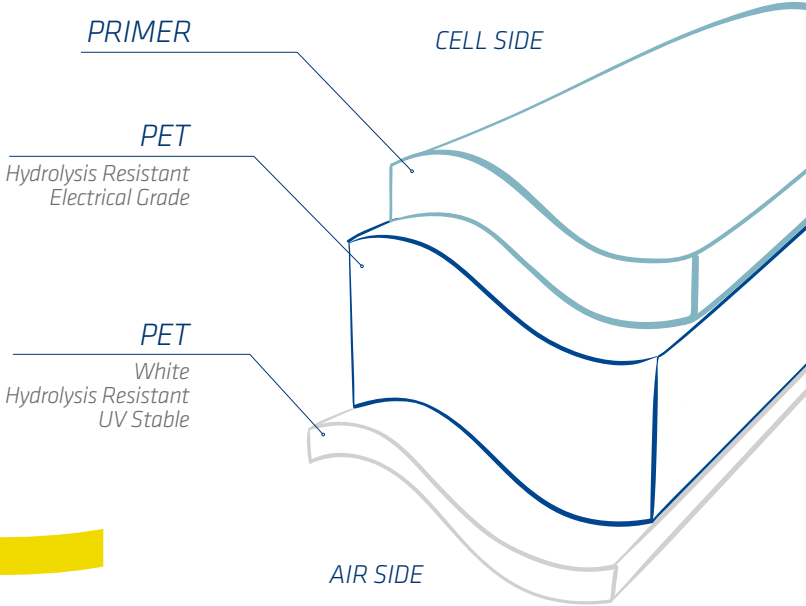
🌱 **PFAS free, low carbon footprint, recyclable and rPET**



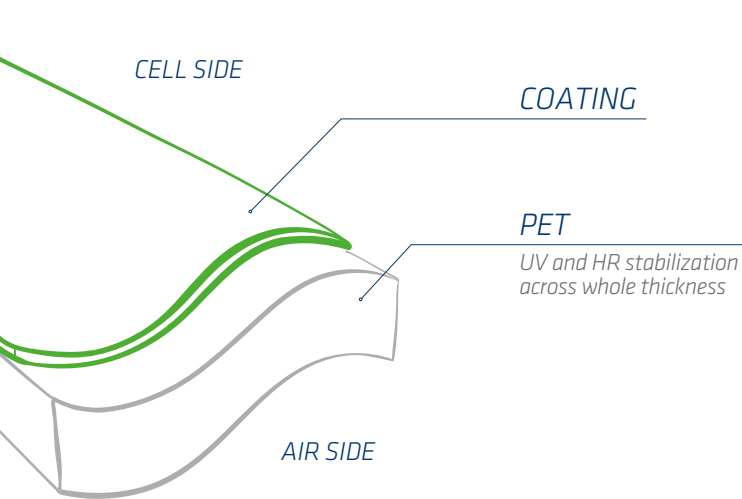
WHITE PET BASED BACKSHEETS



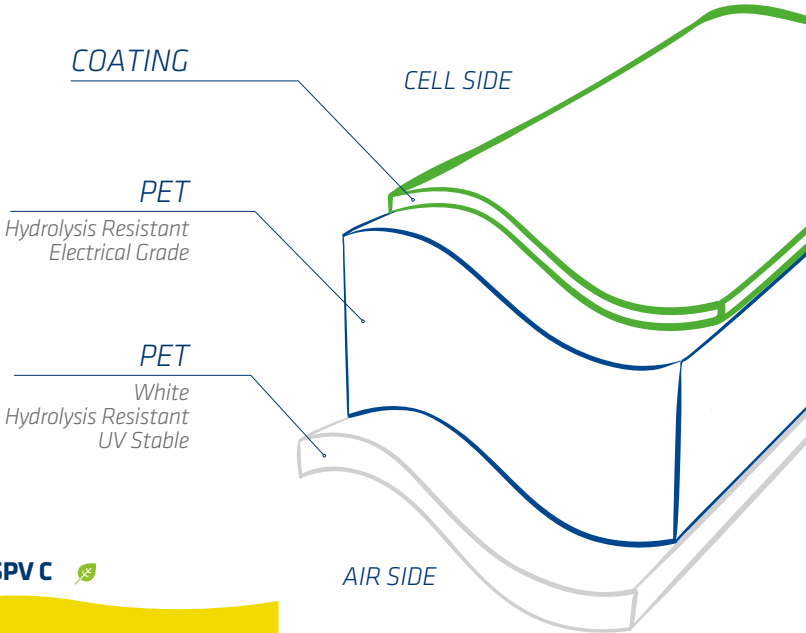
1500
VDC



HDPYE® SPV L



HDPYE® SPV C M



HDPYE® SPV C

dyMat® BACKSHEETS FOR UTILITY

Coveme’s PET backsheets for 1500V have a proven track record being employed in the world’s first 1500V project and further major ongoing 1500V plants. It features thicker inner PET layers in order to comply with the new IEC rules for 1500V insulation. It guarantees more than DHT 2500 hrs, PCT(HAST) 72 hrs and more than 400 kWh/m2 of UV irradiation resistance. Additionally, the dyMat® HDPYE series provides a high adhesion strength to all types of encapsulants, excellent resistance to sand, salt mist, ammonia and chemical solvents corrosion. The HDPYE SPV C/L, is available with white , black or black high reflectivity coating, furthermore the HDPYE SPV C M is a single PET layer backsheet with a special coating which provides extremely high bonding to encapsulant and high reflectance. The backsheet range for utility is also available with the 33% of recycled PET .

Extra Low
WVTR

Record selling
product

HDPYE® SPV L

Extra
UV protection

High
Reflectance

Coating
cells side

HDPYE® SPV C

Extra Low
WVTR

Record selling
product

HDPYE® SPV L

Extra
UV protection

High
Reflectance

Coating
cells side

HDPYE® SPV C

Coating
cell side

Mono
layer

HDPYE® SPV C M

Coating
cell side

Mono
layer

HDPYE® SPV C M

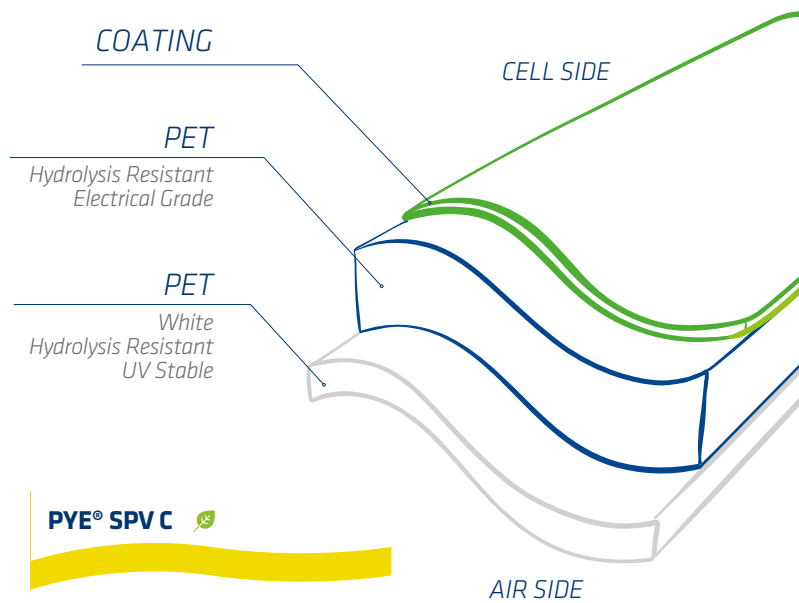
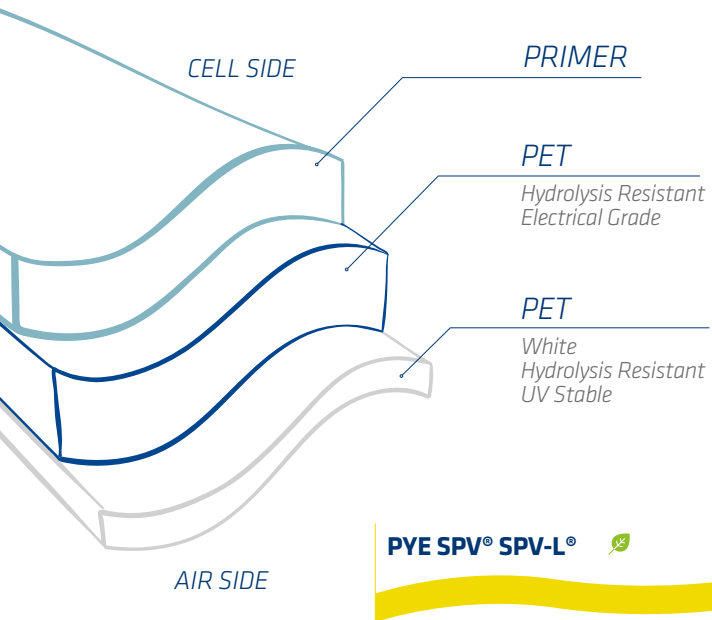
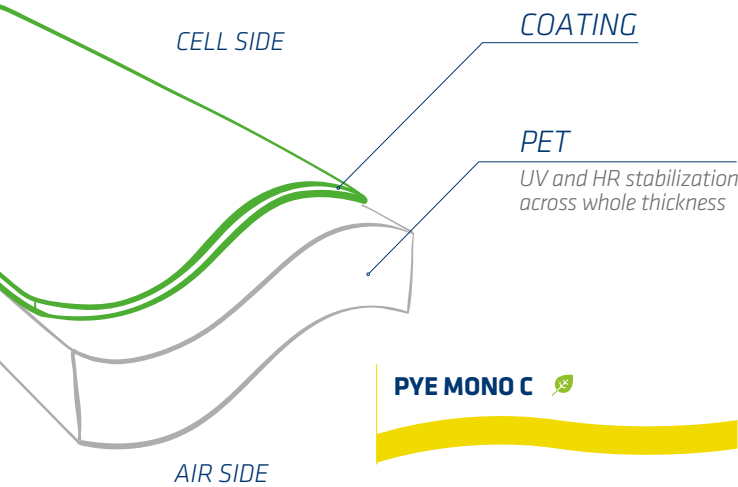
Additional upgrades

- LDO** High humidity barrier + UV protection
- SHR** Super high reflectivity
- LBK** Black on cell side
- BKHR** Black high reflectivity

PFAS free,
low carbon
footprint,
recyclable
and rPET

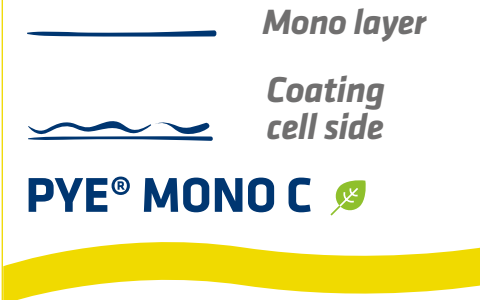


WHITE AND BLACK PET BASED BACKSHEETS



dyMat® BACKSHEETS FOR DISTRIBUTED GENERATION

Coveme's standard backsheet has been successfully tested on the market for more than 15 years. It features a special high-grade PET able to guarantee more than DHT 2500 hrs, PCT(HAST) 72 hrs and more than 400 kWh/m2 of UV irradiation resistance. Additionally, the dyMat® range provides a high adhesion strength to all types of encapsulants, excellent resistance to sand, salt mist, ammonia and chemical solvents corrosion. The mono layer version features superior resistance to UV and hydrolysis thanks to its bulk technology and shows excellent performances in the combined UV+DHT tests together with an intrinsic high reflectivity. The backsheet range for distributed generation is also available with the 33% of recycled PET 🌿.



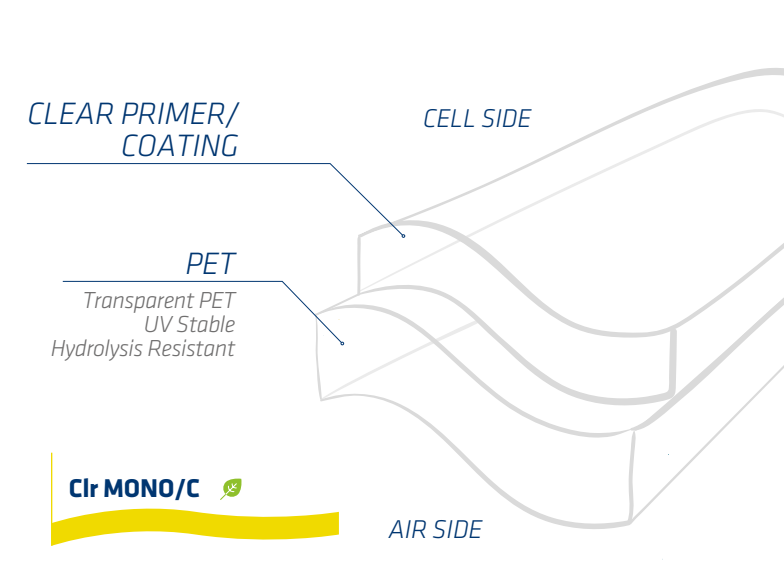
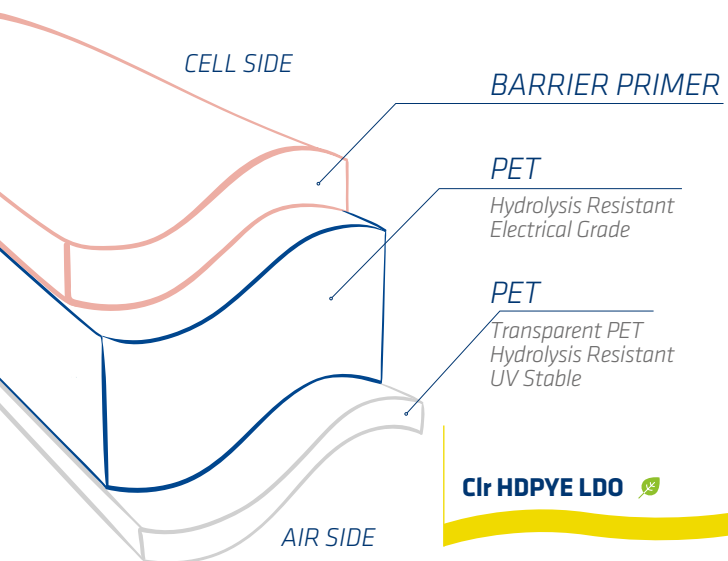
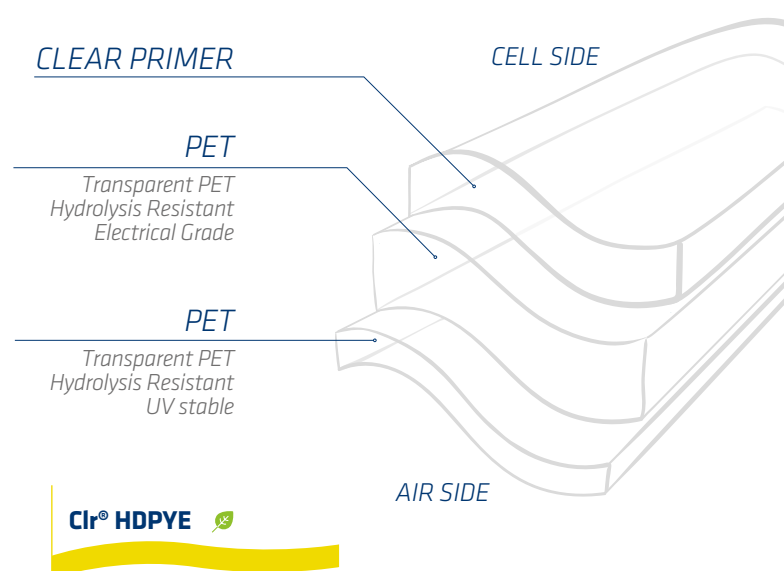
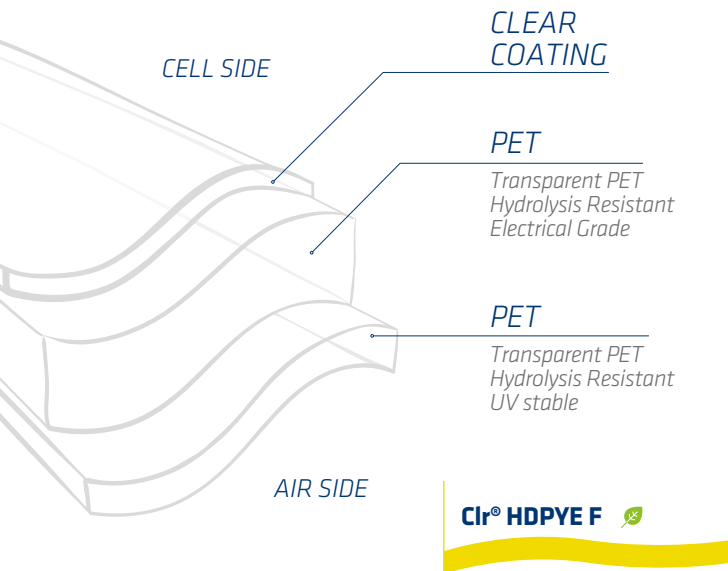
Additional upgrades

- SHR** Super high reflectivity
- LBK** Black on cell side
- BKHR** Black high reflectivity

🌿 **PFAS free, low carbon footprint, recyclable and rPET**



CLEAR PET BASED BACKSHEETS



dyMat® BACKSHEETS FOR BIFACIAL PV

Coveme's 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. PV modules protected with Coveme dyMat® Transparent backsheets have been tested by Fraunhofer ISE in Highly Accelerated Stress Test (HAST), in particular DHT 3000h and MAST, with outstanding results.



Clr® HDPYE F

*tested by Fraunhofer ISE



Clr® HDPYE

*tested by Fraunhofer ISE



Clr® HDPYE LDO



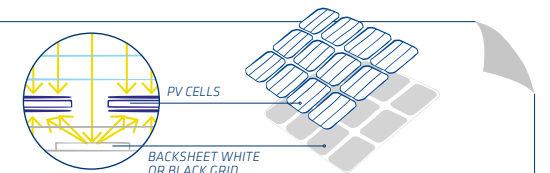
Clr® MONO/C

PFAS free,
low carbon
footprint,
recyclable
and rPET

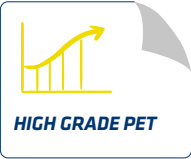
OUTPUT INCREASING OPTIONS:

dyMat® Selective

Optional white or black 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 HIGH REFLECTIVITY PET BASED BACKSHEETS



1000
VDC

1500
VDC

COATING BLACK
HIGH REFLECTIVITY

PET
Hydrolysis Resistant
Electrical Grade

PET
Hydrolysis Resistant
UV Stable
White

HDPYE® SPV CBK HR

CELL SIDE

AIR SIDE

BLACK PRIMER/
COATING
HIGH REFLECTIVITY

PET
Hydrolysis Resistant
Electrical Grade

PET
Black
Hydrolysis Resistant
UV Stable

CELL SIDE

AIR SIDE

COATING BLACK
HIGH REFLECTIVITY

PET
Hydrolysis Resistant
UV stable
White

PYE® MONO CBK HR

AIR SIDE

BK HDPYE SPVL/CBK HR

dyMat® BACKSHEETS FOR DISTRIBUTED GENERATION

Coveme offers high reflectivity dyMat® black backsheets for 1000/1500 VDC installations for distributed generation (DG), in particular rooftop. The range includes monolayer or multilayers versions with a high reflectivity coating. This feature was studied and developed by Coveme to balance the intrinsic light absorption of black colour. The high reflectivity of the black cell side is obtained through a special coating developed by Coveme. It provides a reflectance >55% and balances the intrinsic light absorption of black colour.

Reflectance > 55%

1500 VDC

Double layer

Black coating
high reflectivity

HDPYE® SPV CBK HR

Reflectance > 55%

1000 VDC

Mono layer

Black coating
high reflectivity

PYE® MONO CBK HR

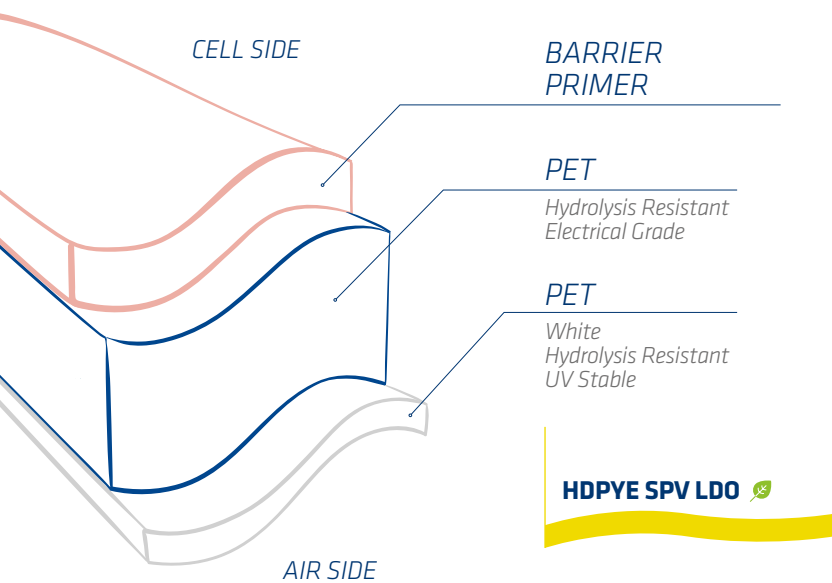
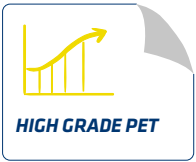
Totally
Black

1500 VDC

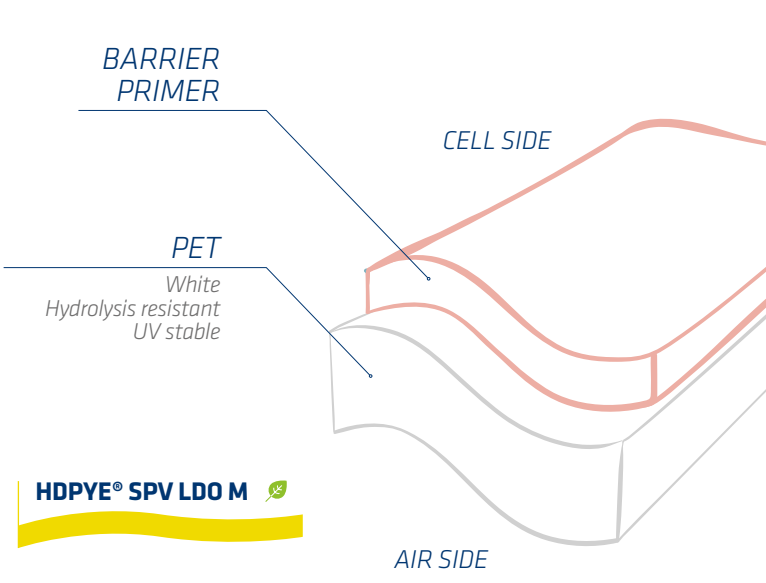
BK HDPYE SPVL/CBK HR

PFAS free,
low carbon
footprint,
recyclable
and rPET

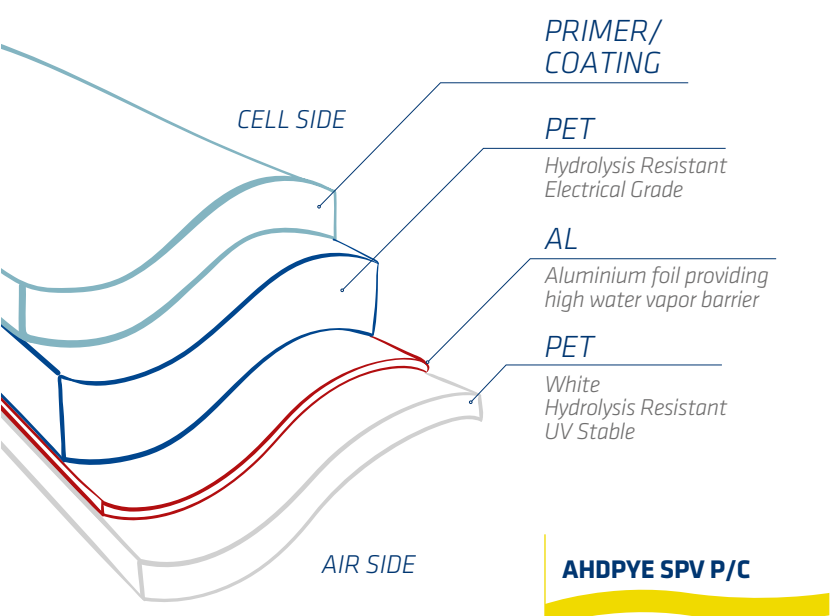
HIGH BARRIER PET BASED BACKSHEETS



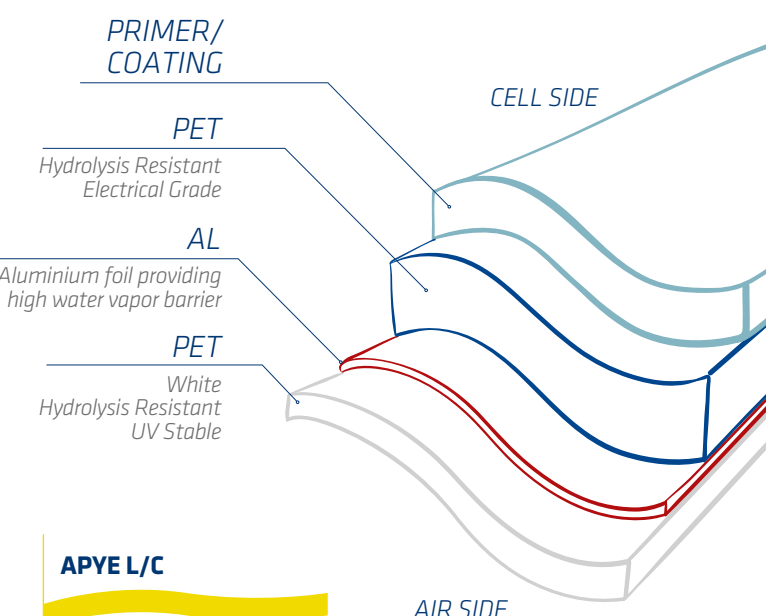
HDPYE SPV LDO



HDPYE SPV LDO M



AHDPYE SPV P/C



APYE L/C

dyMat® BACKSHEETS FOR HJT, TOPCon AND THIN FILM

Coveme has developed a range of dyMat® backsheets specifically designed for TOPCon, HJT, Thin film (CIGS, a-Si, OPV, CIGS, a-Si, OPV and PEROVSKITE), flexible PV and c-Si photovoltaic modules installed near water. The barrier layer is available in aluminium or PET. Both versions have a very low WVTR value, in addition the PET barrier is available in a clear version for a completely transparent high barrier backsheet.



HDPYE® SPV LDO



HDPYE® SPV LDO/M



AHDPYE SPV P/C



APYE L

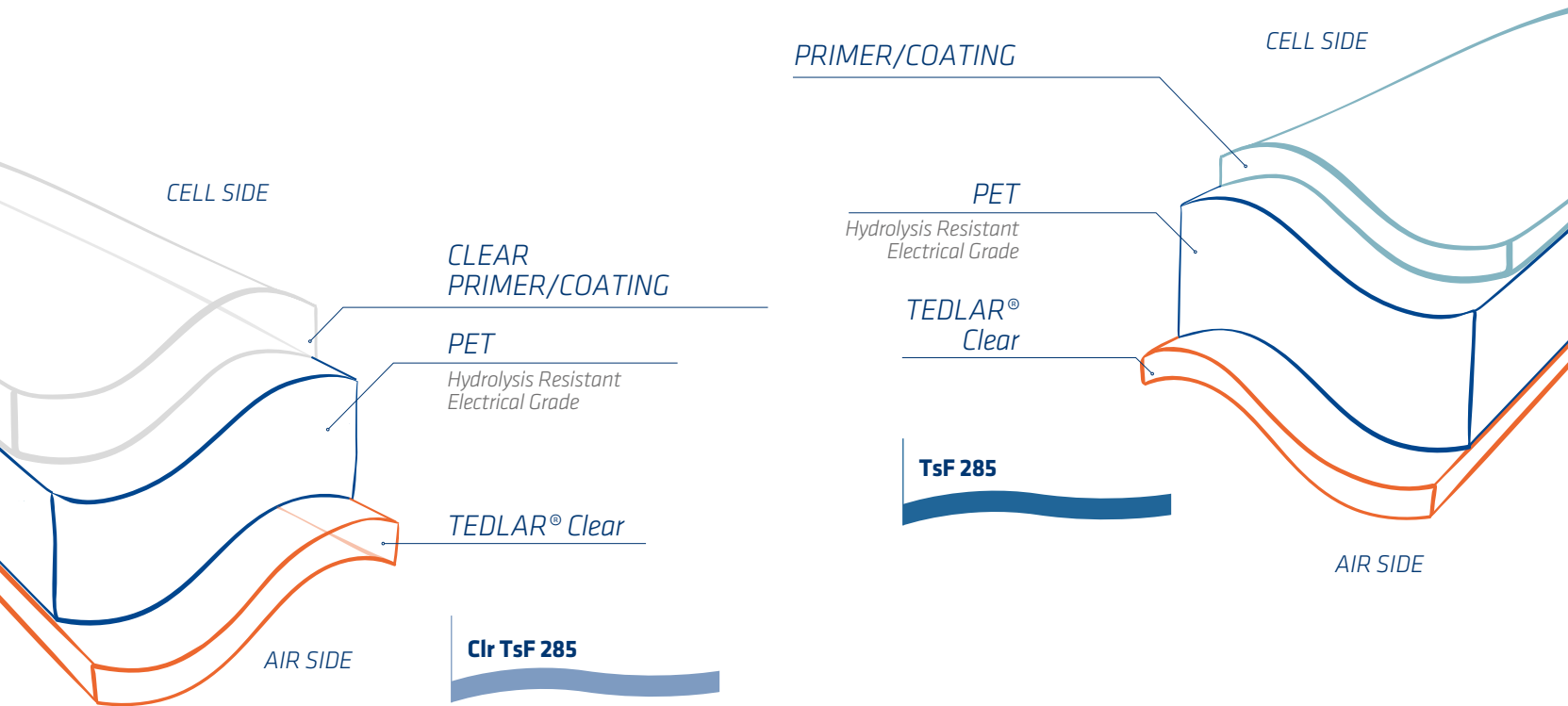
Additional upgrades

LBK Black on cell side

BKHR Black high reflectivity

PFAS free, low carbon footprint, recyclable and rPET

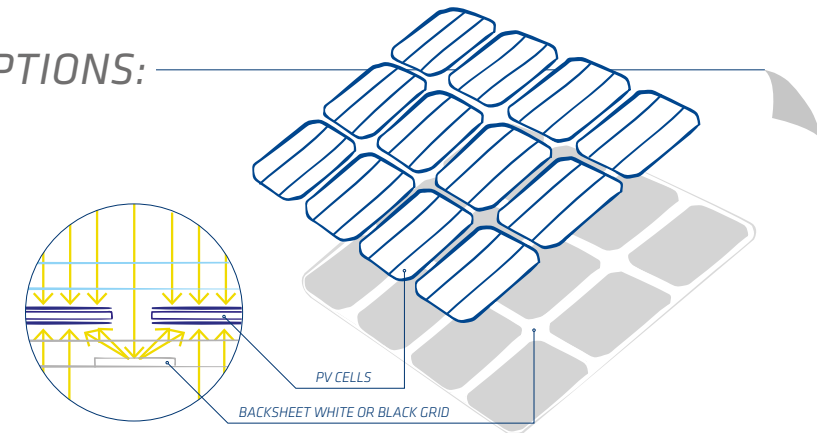
TEDLAR® BASED BACKSHEETS



OUTPUT INCREASING OPTIONS:

DYMAT® SELECTIVE

Optional white or black 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.



dyMat® BACKSHEETS WHITE AND CLEAR

Coveme's white and transparent Tedlar® based backsheet comply with the new IEC for 1500 VDC installation and features a PVF layer of 25µm thickness combined with an inner PET layer of 285µm thickness. As for the excellent Tedlar® weatherability properties, Coveme dyMat® TsF series exhibits outstanding resistance to UV irradiation. The clear version is employed in bifacial or standard modules in BIPV, utility, greenhouse, commercial installations, and grid or off grid application.

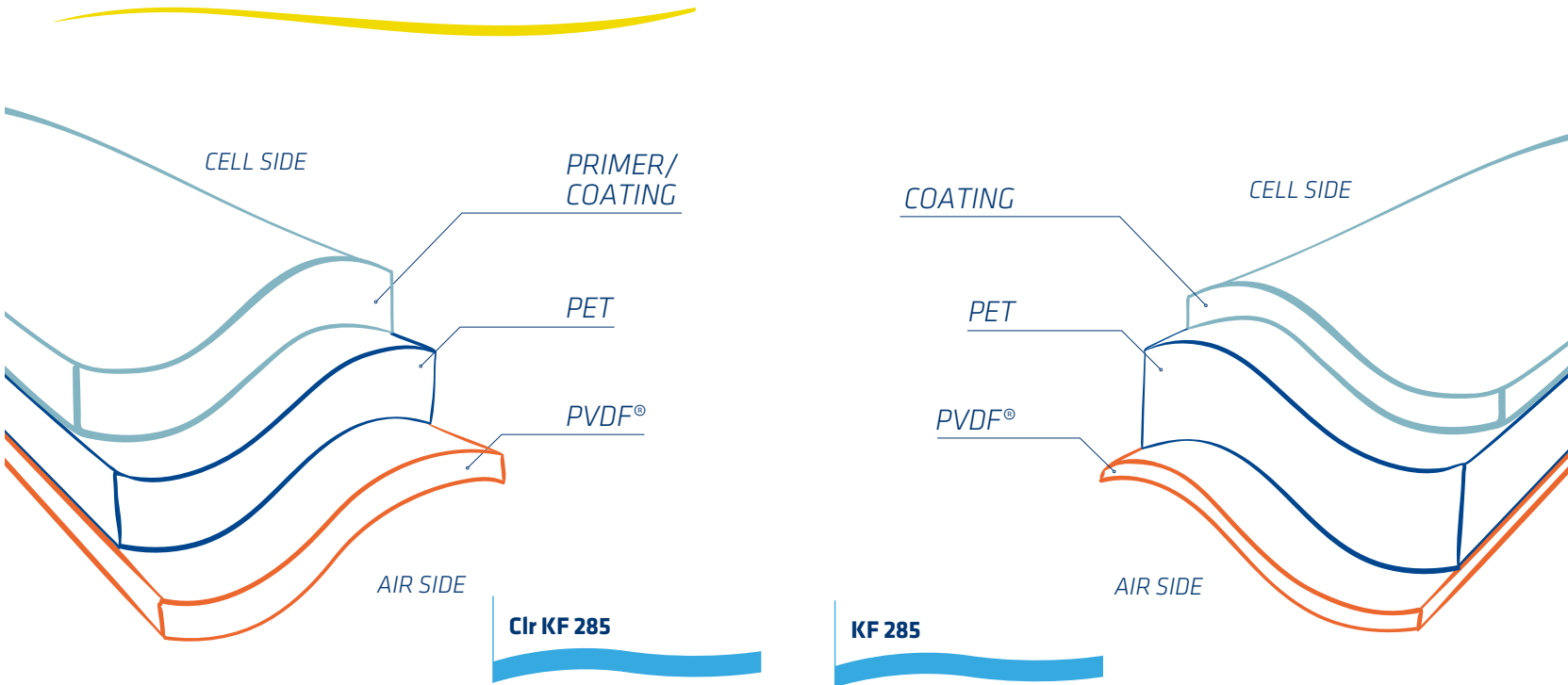


Additional upgrades

- LDO** High humidity barrier + UV protection
- SHR** Super high reflectivity
- LBK** Black on cell side
- BKHR** Black high reflectivity



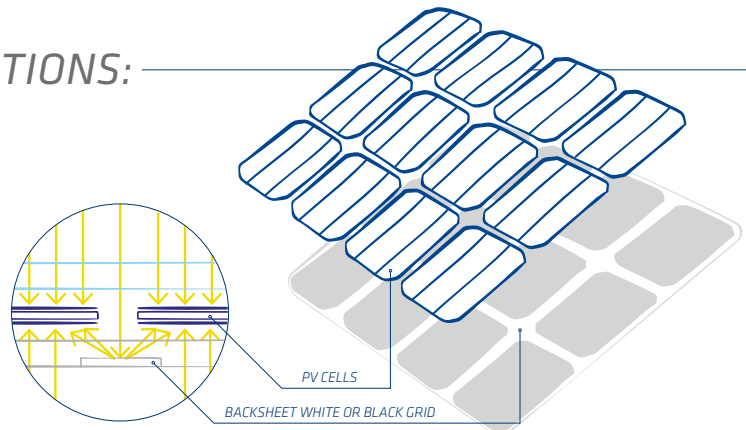
PVDF® BASED BACKSHEETS



OUTPUT INCREASING OPTIONS:

DYMAT® SELECTIVE

Optional white or black 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.



dyMat® BACKSHEETS WHITE AND CLEAR

Coveme's PVDF based backsheet for 1500 VDC features a PVDF layer combined with a thicker inner PET layer. This Coveme fluoro-based backsheet, dyMat® KL series, features a superior resistance to UV irradiation. The clear version is employed in bifacial or standard modules in BIPV, utility, greenhouse, commercial installations, and grid or off grid application.

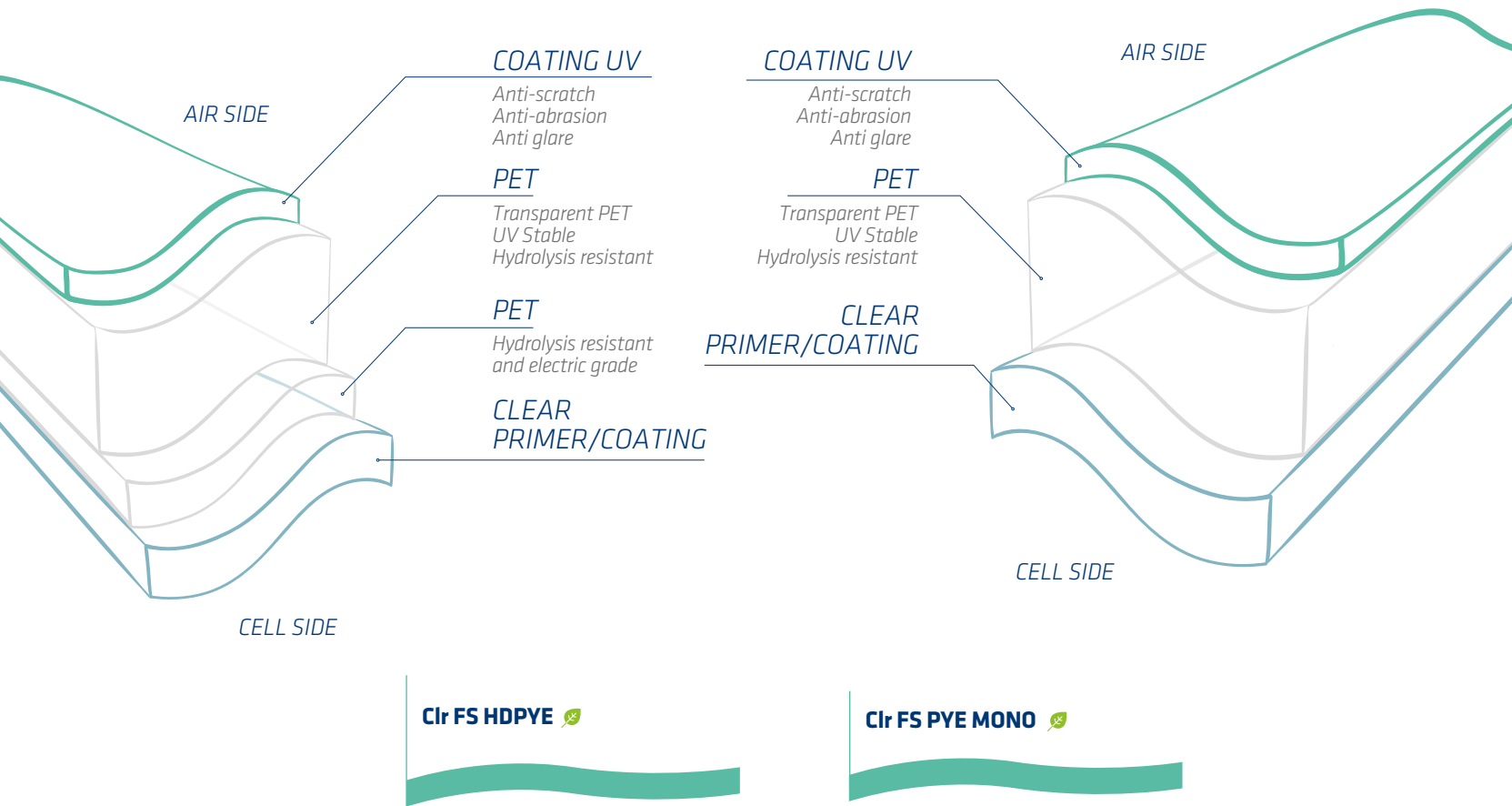


Additional upgrades

- LDO** High humidity barrier + UV protection
- SHR** Super high reflectivity
- LBK** Black on cell side
- BKHR** Black high reflectivity



FRONTSHEETS CLEAR PET BASED



dyMat® FRONTSHEETS

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 high-tech EB curing production process. dyMat® frontsheets have been specifically developed to guarantee an extra high UV and hydrolysis resistance together with outstanding anti-scratch and anti-abrasion properties. dyMat® Clear PET Frontsheets are suitable for 1000 and 1500 VDC and they can be supplied with the UV coating in a matt anti-glare finish for output enhancement and traffic safety 🌿.



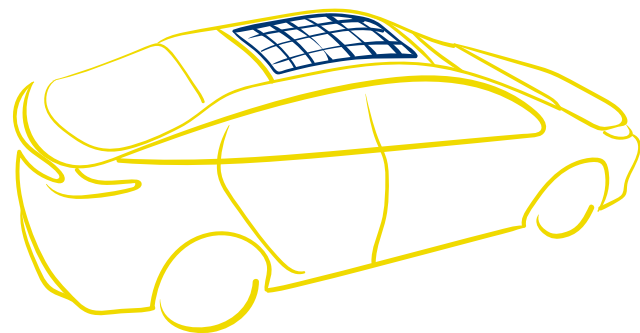
🌿 **PFAS free,**
low carbon
footprint,
recyclable
and rPET



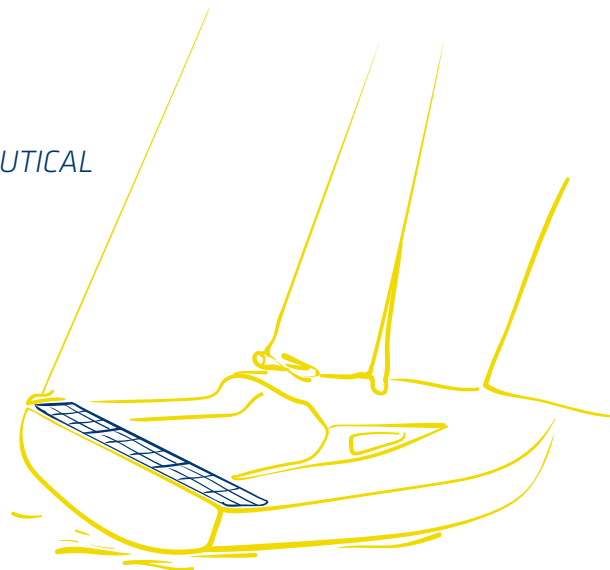
SPECIALITIES

Coveme has developed specific **dyMat®** films and laminates that are employed as frontsheet or backsheet in flexible lightweight photovoltaic modules. For printed solar cells Coveme offers special films with printable coatings and high dimensional stability. Applications include rooftop, building integrated , automotive , nautical and all surfaces with limited loading capacity.

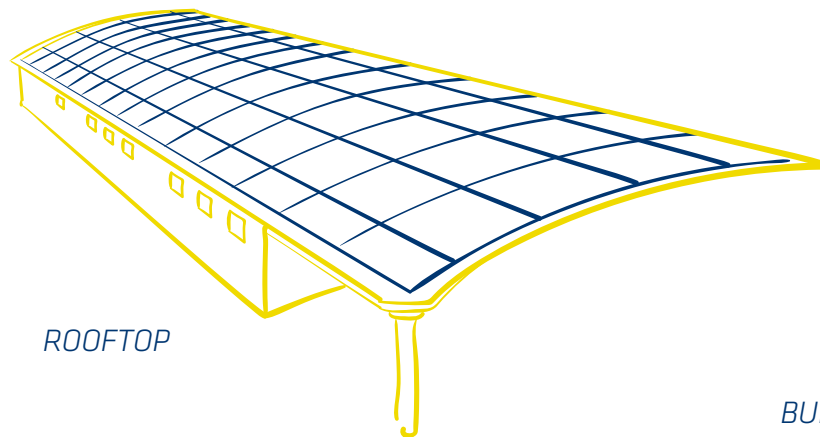
AUTOMOTIVE



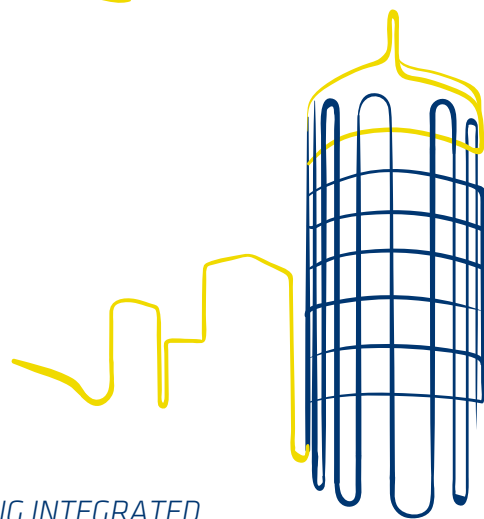
NAUTICAL



ROOFTOP



BUILDING INTEGRATED










dyMat® FOR FLEXIBLE, PRINTED AND ORGANIC PV

Coveme has developed specific **dyMat®** films and laminates that are employed as frontsheet or backsheet in flexible lightweight photovoltaic modules. For printed solar cells Coveme offers special films with printable coatings and high dimensional stability. Applications include rooftop, building integrated , automotive , nautical and all surfaces with limited loading capacity.

dyMat® FRONTSHEETS is a totally transparent laminate with a special coating for enhanced UV and scratch resistance. These characteristics make it particularly suitable to be employed as a frontsheet in flexible photovoltaics. For back protection of these modules Coveme offers a range of high performance **dyMat® BACKSHEETS** in different colours that guarantees durability over the years, electrical insulation and high resistance to weathering agents such as moisture and extreme temperatures .

In the field of printable and organic photovoltaics Coveme offers its **dyMat® PRINTABLE** , a heat stabilized and surface treated polyester film suitable for roll to roll and sheet printing processes.

 Totally Transparent	 Dimensionally Stable	 Low WVTR
 Enhanced UV Resistance	 Printable	 PDI > 1500 VDC
 Scratch Resistance	dyMat® Frontsheets	dyMat® Backsheets
dyMat® Frontsheets	dyMat® Printable	dyMat® Backsheets

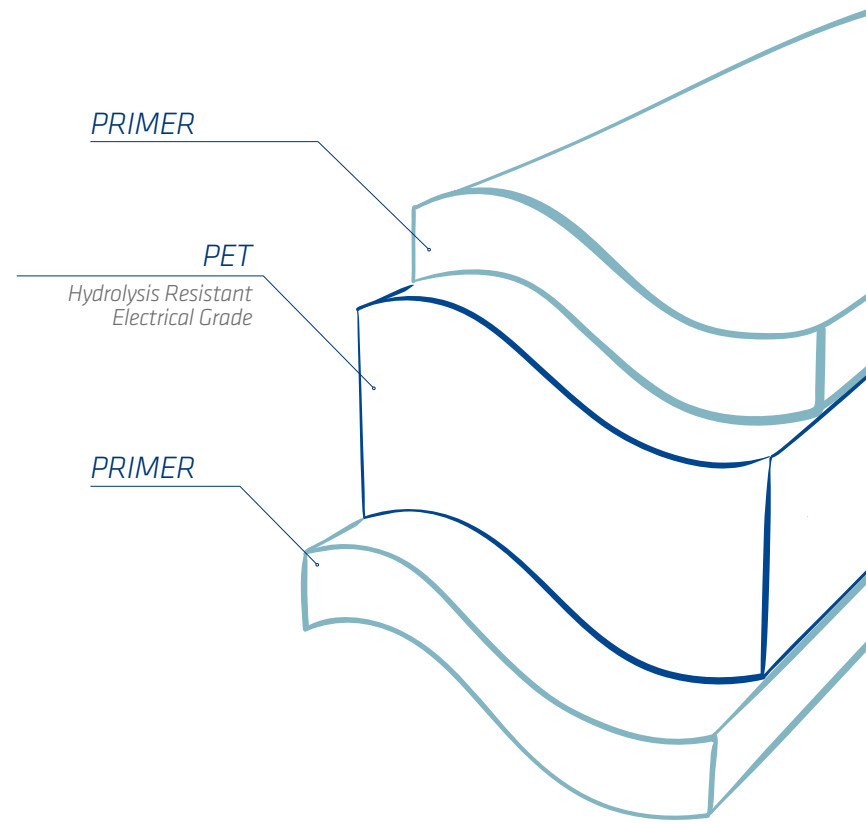


ACCESSORIES

dyMat EPE®

dyMat EPE® is designed to be used as electrical insulator in between ribbons and bus bars in PV module fabrication. The material has a perfect bonding with both encapsulation EVA and whichever backsheets, thanks to its structure with a double layer of Primer.

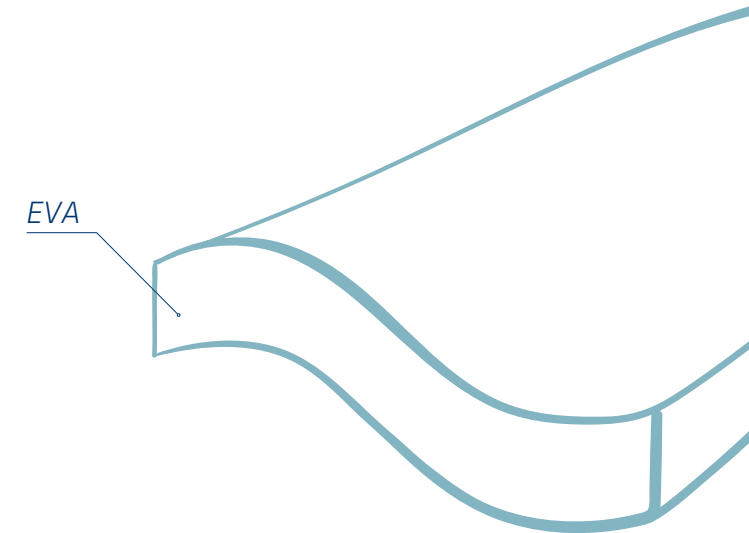
- ✓ **Multilayer component made of PRIMER/PET/PRIMER**
- ✓ **Enhanced adhesion with encapsulant**
- ✓ **White, black and transparent versions available.**



dyMat E®

Transparent adhesive tape made of EVA. It is used to fix components such as cells, ribbons etc. during PV module fabrication. In the lamination process the substrate melts and becomes totally embedded with encapsulating EVA.

- ✓ **Transparent EVA**
- ✓ **Modified acrylic emulsion adhesive**



CERTIFICATIONS & RATING



Coveme is certified ISO 9001: 2015 for quality management standards, ISO 14001: 2015 for environmental management and ISO 45001:2018 for occupational health and safety.

COVEME ITALY CERTIFICATES



ISO 9001:2015



ISO 14001:2015



ISO 45001:2018

COVEME CHINA CERTIFICATES



ISO 9001:2015



ISO 14001:2015



ISO 45001:2018



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



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



Coveme complies with the Ecomate rating which evaluates the environmental, social and governance (ESG) performance of the company

COVEME PHOTOVOLTAIC PRODUCTS ARE UL REGISTERED AND TÜV RHEINLAND AND TÜV SUD CERTIFIED:





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