

TYPE APPROVAL

Certificate No.:
TA-DNV-CP-0434-06214-1

Issued:
2025-03-13

Valid until:
2030-03-13

Issued for:

Carbon Fibre Product

with type designation(s)

Biaxial Carbon Fibre Fabric (-45°/+45° and 90°/0° in the range of 140 – 1500 g/m²)

As specified in Annex 1

Issued to:

Sky Advanced Materials Kft.

East Gate Business Park A1 221/12, 2151 Fót, Hungary

According to:

DNV-SE-0436:2022-09 Shop approval in renewable energy

and

DNV-CP-0434:2021-09 Type approval – Uni- and multi-axial multi-ply fabrics made of carbon fibres

Applying:

DNV-SE-0441:2021-10 Type and component certification of wind turbines

Based on the documents listed in Annex 1.

Any significant changes in the design and/or quality of the material will render this Type Approval invalid.

Hellerup, 2025-03-13

For DNV Renewables Certification

Christopher Harrison
Service Line Leader - Component Certification



By DAKKS according DIN EN IEC/ISO 17065
accredited Certification Body for products. The
accreditation is valid for the fields of certification
listed in the certificate.

Hamburg, 2025-03-13

For DNV Renewables Certification

Bernhard Krüger
Project Manager

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1.1 Product description and application

Biaxial fabric made of carbon fibres for use in FRP components in wind energy and industry.

1.2 Approved variants

SKY X B2-Y P5Z-W13 and SKY X B2-Y P5Z-T73

SKY X ZN-Y T5Z-W13 and SKY X ZN-Y T5Z-T73

With:

X: Number for areal weight in g/m² ranging from 140 g/m² to 1500 g/m²

B2: Fiber orientation $\pm 45^\circ$

ZN: Fiber orientation $0^\circ/90^\circ$

Y: Number for width in mm ranging from 100 mm to 2540 mm

P5Z: Pillar stitch pattern

T5Z: Tricot stitch pattern

W13: Fabric is made from carbon fibre roving Zoltek PX3505015W-13 or PX3505030W-13 for epoxy resin

T73: Fabric is made from carbon fibre roving Zoltek PX3505015T-73 and PX3505030T-73 for vinyl ester resin

Typical filament diameter: 7.2 μm

1.3 Type Approval documentation

Technical data sheet(s)	SKY X B2-Y P5Z-W13, Rev. 2, Sky Advanced Materials, 2024-12-03 SKY X B2-Y P5Z-T73, Rev. 2, Sky Advanced Materials, 2024-12-03 SKY X ZN-Y P5Z-W13, Rev. 2, Sky Advanced Materials, 2024-12-03 SKY X ZN-Y P5Z-T73, Rev. 2, Sky Advanced Materials, 2024-12-03 SKY 200B2-127 P5Z-W13, Rev. 1, Sky Advanced Materials, 2024-11-19 SKY 1000B2-127 P5Z-W13, Rev. 1, Sky Advanced Materials, 2024-11-19
Safety data sheet(s)	CF-01, ZOLTEK PX Carbon Fiber, Zoltek, 2020-09-02
Test report(s)	B087/24.1, Qualification BX200, BX1000, Applus IMA, 2024-11-22 Supplements to B087/24, reexamination tensile and fibre content tests, 2025-02-10/13
Inspection documentation	WIR-06214/11126/11127-001-0, Workshop Inspection Report, DNV, 2024-07-02
Quality control documentation	24 100 2548, ISO 9001:2015 Certificate, ÉMI-TÜV SÜD Kft., 2022-11-04 Several CoA's

1.4 Material properties

Property	Test Method	SKY X B2-Y P5Z-W13	SKY X B2-Y P5Z-T73	SKY X ZN-Y T5Z-W13	SKY X ZN-Y T5Z-T73	Unit
Ply construction	n/a	-45°/+45°	-45°/+45°	90°/0°	90°/0°	[-]
Mass per unit area	ISO 3374	140 - 1500 $\pm 5\%$	140 - 1500 $\pm 5\%$	140 - 1500 $\pm 5\%$	140 - 1500 $\pm 5\%$	g/m ²
Thickness	ISO 5084	0.10 - 0.83	0.10 - 0.83	0.10 - 0.83	0.10 - 0.83	mm
Width	ISO 5025	100 - 2540 $\pm 5\%$	100 - 2540 $\pm 5\%$	100 - 2540 $\pm 5\%$	100 - 2540 $\pm 5\%$	mm

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Property	Test Method	SKY X B2-Y P5Z-W13	SKY X B2-Y P5Z-T73	SKY X ZN-Y T5Z-W13	SKY X ZN-Y T5Z-T73	Unit
Resin compatibility	n/a	Epoxy	Vinyl ester	Epoxy	Vinyl ester	[-]

The roving size shall not exceed 50.000 filaments

1.5 Approved production site

Sky Advanced Materials Kft.

East Gate Business Park A1, 221/12

2151 Fót

Hungary

Last workshop inspection date: 2024-06-26

1.6 Certificate maintenance

A periodical assessment is carried out 2.5 years after the issue date of the Type Approval, to verify that the conditions for the type approval have not been altered. In the case of major changes of the approved production processes and methods during the validity time of the Type Approval, the changes shall be reported to DNV. An intermediate inspection of the production workshop might be needed based on the implemented changes. A workshop holding a valid Shop Approval for manufacturing of composite materials for the respective material type is exempted from the periodical assessment.