



# TYPE APPROVAL

Certificate No.:  
TA-DNV-CP-0082-10601-0

Issued:  
2025-02-28

Valid until:  
2030-02-28

Issued for:

## Glass fibre rovings

with type designation(s)

## E6DR-380 Series

As specified in Annex 1

Issued to:

## Jushi Group Co., Ltd.

669 Wenhua Road (S.), Tongxiang Economic Development Zone, Zhejiang 314500, P.R. China

According to:

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

and

## DNV-CP-0082:2024-09 Type approval – Glass fibre rovings

Applying:

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

Based on the documents listed in Annex 1.

This Type Approval supersedes the Type Approval TAK00000SV.

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

Hellerup, 2025-02-28

For DNV Renewables Certification

Harrison, Christopher

Service Line Leader, Component Certification



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

Shanghai, 2025-02-28

For DNV Renewables Certification

Li, Yu Hua

Project Manager

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## Product description and application

E6-380 direct roving with E6 glass formulation for weaving and filament winding, silane-based sizing, for amine and anhydride curing epoxy systems.

## Approved variants

This Type Approval covers the direct roving E6-380 with silane-based sizing for amine and anhydride curing epoxy systems with the linear densities 300tex, 600tex, 1200tex, 2400tex, and 4800tex and filament diameters of 13 $\mu$ m, 17  $\mu$ m or 24 $\mu$ m:

E6DR13-300-380  
E6DR17-600-380  
E6DR17-1200-380  
E6DR17-2400-380  
E6DR24-4800-380

## Limitations for the product

The approval is limited for application of the product in blades of wind turbines.  
Any significant changes in design and/or quality of the material will render the approval invalid.

## Type Approval documentation

Technical data sheet(s)	E6-380, issued by China Jushi Co., Ltd.
Safety data sheet(s)	Q/JS J0520-2019, Version 6, SAFE USE INSTRUCTIONS OF ROVING, Jushi Group Co., Ltd., dated 2019.08.15
Test report(s)	BG210506101, Test report, Glass Fiber Roving (E6DR13-300-380), Jushi Group Co., Ltd. Testing Center, dated 2021-05-06 BG210506102, Test report, Glass Fiber Roving (E6DR17-600-380), Jushi Group Co., Ltd. Testing Center, dated 2021-05-06 BG210506103, Test report, Glass Fiber Roving (E6DR17-1200-380), Jushi Group Co., Ltd. Testing Center, dated 2021-05-06 BG210506104, Test report, Glass Fiber Roving (E6DR17-2400-380), Jushi Group Co., Ltd. Testing Center, dated 2021-05-06 BG210506105, Test report, Glass Fiber Roving (E6DR24-4800-380), Jushi Group Co., Ltd. Testing Center, dated 2021-05-06 Annex 3.xlsx (specimen preparation)
Inspection documentation	WIR-10596-A176-001, Rev.0, Workshop Inspection Report, issued by DNV, dated 2024-12-05
Quality control documentation	20319142/2, Certificate ISO 9001:2015, issued by DEKRA Certification GmbH, dated 2025-02-24

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## Material properties

(All the values are mean values from type testing)

Properties	Test method	E6DR13-300-380	E6DR17-600-380	E6DR17-1200-380	E6DR17-2400-380	E6DR24-4800-380	Unit
Linear density	ISO 1889	299	599	1204	2326	4726	tex
Filament diameter	ISO 1888	13.0	16.5	17.0	16.8	23.7	µm
Loss of ignition	ISO 1887	0.61	0.58	0.64	0.63	0.56	%
Moisture content	ISO 3344	0.03	0.03	0.04	0.03	0.03	%
Tensile strength	ISO 3341	0.53	0.52	0.52	0.52	0.50	N/tex

## Approved production sites

Jushi Group Co., Ltd.  
669 Wenhua Road (S.)  
Tongxiang Economic Development Zone  
Zhejiang 314500  
P.R. China

Last workshop inspection date: 2024-11-05

## Certificate maintenance

A periodical assessment needs to be carried out 2.5 years after the issue date of the Type Approval. 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(s) might be needed based on the implemented changes. A workshop holding a valid Shop Approval for manufacturing of composite materials is exempted from the periodical assessment.