

LABORATORY APPROVAL

Certificate No.: LA-DNV-SE-0436-08264-1 Issued: 2025-01-22

Valid until: 2028-01-21

Issued for:

Mechanical and analytical testing of plastic and fibre reinforced materials

Issued to:

SAERTEX GmbH & Co. KG

Brochterbecker Damm 52 48369 Saerbeck, Germany

According to:

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

Applying:

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

Based on the document:

CR-LA-DNV-SE-0436-08264-1 Certification Report, dated 2025-01-14

This laboratory approval is valid for the test methods listed in Annex 1.

Changes in the relevant processes (testing and quality) or in responsible personnel as named in this certificate are to be approved by DNV. See Annex 1 for listing of personnel.

Hellerup, 2025-01-22

For DNV Renewables Certification



Hamburg, 2025-01-22

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.

Bernhard Krüger Project Manager



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Personnel

Head of Laboratory Ms. Carolin Solzbacher

Mr. Nils Otte (Deputy)

List of approved test methods

Analytical Tests	Test Method
DIN EN ISO 1172	Textile-glass-reinforced plastics, prepregs, moulding compounds and laminates - Determination of the textile-glass and mineral-filler content - Calcination methods
DIN EN ISO 1183-1	Methods for determining the density of non-cellular plastics Immersion method, liquid pyknometer method and titration method
DIN EN ISO 11357-2	Differential scanning calorimetry (DSC) Part 2: Determination of glass transition temperature
DIN EN ISO 5084	Textiles Determination of thickness of textiles and textile products
DIN EN ISO 21765	Textiles - Determination of fabric deformability by forced mechanical distension
QM-PA 001 (internal method)	Reinforcement products - Mats and fabrics - Determination of mass per unit area
QM-PA 010 (internal method)	Reinforcement products - Determination of the yarn-add-in

Mechanical and technological tests	Test Method
DIN 53294	Prüfung von Kernverbunden – Schubversuch (Rigid celluar plastics - Determination of shear properties)
DIN EN 2850	Carbon fibre thermosetting resin unidirectional laminates Compression test parallel to fibre direction
DIN EN ISO 844 Methode A	Rigid cellular plastics — Determination of compression properties, Procedure A
DIN EN ISO 527-1	Plastics - Determination of tensile properties Part 1: General principles
DIN EN ISO 527-4	Plastics - Determination of tensile properties Part 4: Test conditions for isotropic and orthotropic fibre-reinforced plastic composites



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DIN EN ISO 527-5 Plastics - Determination of tensile properties

Part 5: Test conditions for unidirectional fibre- reinforced plastic

composites

DIN EN ISO 14125 Fibre-reinforced plastic composites

Determination of flexural properties

DIN EN ISO 14126 Fibre-reinforced plastic composites

Determination of compressive properties in the in-plane direction

DIN EN ISO 14129 Fibre-reinforced plastic composites Determination of the in-plane

shear stress/shear strain response, including the in-plane shear

modulus and strength, by ± 45° tension test method

DIN EN ISO 14130 Fibre-reinforced plastic composites

Determination of apparent interlaminar shear strength by short

beam-method

ISO 13003

Fibre-reinforced plastics - Determination of fatigue properties (Tension – Tension)

under cyclic loading conditions

In combination with LA-PA-006:

Dauerschwing Eigenschaften nach ISO 13003

(Determination of fatigue properties according to ISO 13003)

ASTM C297/C297M Standard Test Method for Flatwise Tensile Strength of Sandwich

Constructions

Standard Test Method for Core Shear Properties of Sandwich ASTM C393/C393M

Constructions by Beam Flexure

ASTM D2344/D2344M Standard Test Method for Short-Beam Strength of Polymer Matrix

Composite Materials and Their Laminates

Standard Test Method for In-Plane Shear Response of Polymer ASTM D3518/D3518M

Matrix Composite Materials by Tensile Test of a ±45° Laminate

ASTM D6641/D6641M Standard Test Method for Compressive Properties of Polymer

Matrix Composite Materials Using a Combined Loading

Compression (CLC) Test Fixture

Standard Test Method for Shear Properties of Composite ASTM D7078/D7078M

Materials by V-Notched Rail Shear Method

The authorized personnel who will sign the test reports:

- Ms. Carolin Solzbacher
- Mr. Nils Otte
- Dr. Paul Kipke