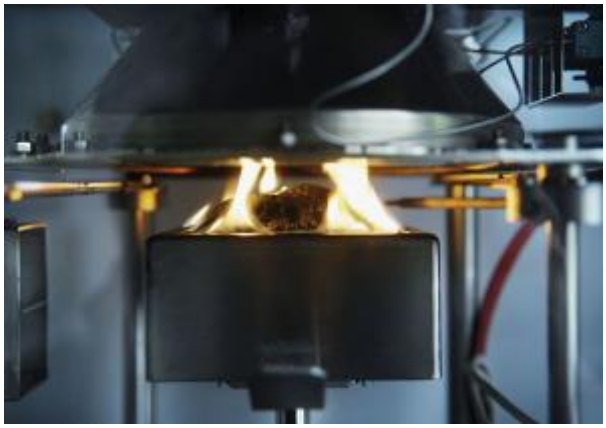
Train
Lab services



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Lantal's independent laboratory tests combustibility, toxicity, smoke production, pilling, wear, abrasion, lightfastness, and many other parameters on an ongoing basis.

Key advantages

Lantal's on-site testing capabilities are associated with the following key advantages:

- **The Lantal laboratory is equipped with the resources needed to perform all relevant tests with interior components**
- **Delivery time for Test Reports of max. 15 working days after receipt of ready-made test specimen**
- **The laboratory services are also available for third customers**

Accreditation of the fire test lab

Lantal's independent laboratory is accredited as a center for fire tests pursuant to ISO/IEC 17025 (STS 0583).
This approval allows the lab to conduct fire tests listed in the scope of accreditation on materials and components used in rail vehicle interiors.

Accreditation according to EN ISO/ICE 17025 since 2012.

Quality management in Switzerland
Certification according to AS/EN 9100:2009, ISO 9001:2008 EQ-Net since 1992

Laboratory tests

EN 45545-2

- Smoke density test according to DIN EN ISO 5659-2
- Spread of Flame according to ISO 5658-2
- Smoke and toxicity test with FTIR according to ISO 5659-2/ EN 17084
- Cone Calorimeter test according to ISO 5660-1
- Flooring Radiant Panel test EN ISO 9239-1
- Burning behaviour of Seat Cushions 45545-2 Annex 2
- Ignitability test EN ISO 11925-2

DIN 5510

- Toxicity measurements by means of FTIR

Apart from the fire tests mentioned in this document, Lantal has the equipment needed to conduct further quality tests such as:

- Abrasion resistance
- Pilling
- Pile resistance
- Light and color fastness
- Tear resistance
- Stability of dimensions
- etc.

(We do not offer these tests to third parties.)

Ignitability test EN ISO 11925-2

The test is carried out in accordance to DIN EN ISO 11925-2

Requirements
Within 60 sec. the flame tips may not exceed a height of 15 cm. measured from the point of impact of the burner flame.

Number of size of specimen

3 test specimen each direction (length- and cross direction) of 250 x 90 mm

Furniture calorimeter

The test is performed according to EN 45545-2 Annex B in the furniture calorimeter pursuant to ISO 9705.

The furniture calorimeter test determines the heat release from vandalized passenger seats exposed to the flame of a square gas burner for 180 s.

Requirements as per EN 45545-2 Table 5

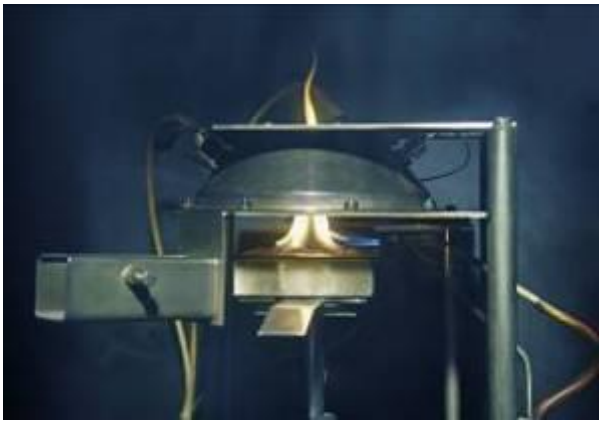
MARHE
- HL1: 75 kW
- HL2: 50 kW
- HL3: 20 kW
- The flame must not rise higher than 1000 mm above the highest point of the seat surface.
- The flame front must not propagate to the lateral edges of the seat surface or of the backrest.

When assessing a seat configuration, the results of all F1 tests (F1, F1A, F1B, F1C, F1D, F1E) are needed for the complete evaluation.

Number and size of test specimen

The test requires 3 original seats with all attached parts.

Smoke and toxicity test with FTIR (Fourier Transformation Infrared Spectroscopy)



This test analyzes the smoke density and smoke toxicity potential of combustible materials and components.

EN 45545-2
The optical smoke density is determined in the test chamber pursuant to DIN EN ISO 5659-2.

After 4 and 8 minutes, gas samples are taken from the chamber and quantified with FTIR.
The implementation of the test and the requirements depend on the type of application of the product and on the hazard level.

25 kW/m^2:	T10.03
	T11.02
50 kW/m^2:	T10.01
	T10.02
	T10.04
	T11.01

DIN 5510-2 : 2009-05
In a test chamber specified by DIN EN ISO 5659-2, the specimens are exposed to radiant heat of 25 kW/m^2 and an ignition flame. After 4 and 8 minutes, gas samples are taken from the chamber and quantified with FTIR.

Requirements
FED (Fractional effective dose) ≤ 1

Number and size

For this test, 5 specimens measuring 75 x 75 mm in end-use thickness (max. specimen thickness 25 mm) must be provided. At least 3 specimens must be tested.

Spread of flame

The test is performed pursuant to ISO 5658-2.

This method measures the lateral spread of the flame on the surface of a vertically oriented specimen. The classification is determined on the basis of CFE (**C**ritical heat **F**lux at **E**xtinguishment).

Requirements
The requirements imposed by EN 45545-2 depend on the product application parameters and on the hazard level of the railway vehicle.

T02

Number and size

Four 790 x 150 mm specimens each, longitudinally and transversally (if necessary), thickness as in original design, but max. 70 mm thick.

Cone Calorimeter Test

The test is performed pursuant to ISO 5660-1.

The cone calorimeter test is used to determine the rate of heat emission (ARHE) via oxygen depletion. Calculation of MARHE (maximum ARHE across the duration of the test).

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UID-Nr. CHE-111.723.178

Requirements
The requirements of EN 45545-2 chart 5 depend on the product application and on the hazard level.

T03.01 / T03.02

Number and size of test specimen

For this test, 5 specimens measuring 100 x 100 mm in end-use thickness (but max. 50 mm) must be provided. At least 3 specimens must be tested.

Flooring radiant panel test

The test is performed pursuant to EN ISO 9239-1.

Classification and requirements of EN 45545-2 Table4 5 R10

- HL1: CHF ≥ 4.5 kW/m^2
- HL2: CHF ≥ 6.0 kW/m^2
- HL3: CHF ≥ 8.0 kW/m^2

T04

Classification and requirements to DIN 5510-2 : 2009-05 Table 5.

The flooring radiant panel test determines the flammability classes SF1 – SF3 of floorcoverings.

Critical radiation intensity (kW/m^2):
Flammability class
- SF1: ≥ 2.5
- SF2: ≥ 2.5
- SF3: ≥ 4.5

Integral of light attenuation (%*min):
Flammability class
- SF1: no requirement
- SF2: ≤ 2500
- SF3: ≤ 750

Number and size of test specimen

For this test, 3 specimens each per direction (if an orientation can be recognized) measuring 1050 x 230 mm in end-use thickness (max. 25 mm) must be provided. First, 1 specimen in each direction is tested. Then, the remaining samples of the direction that resulted in the lower CHF (**C**ritical **H**eat **F**lux at extinguishment) or HF-30 are tested.

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Paper cushion test

The test is performed pursuant to UIC 564.

The paper cushion test is used to determine the fire-safety suitability of complete artificially vandalized and/or intact seats.

Requirements

- The height of the flame above the seat surface must not exceed 100 cm
- The flames must have extinguished after 15 or 10 minutes of testing
- The front of the flame must not reach the edge of any of the seats

Number and size of test specimen

UIC 564

Testing pursuant to UIC 564 Annex 13 requires a complete, standard-sized seat or a model seat. In case the seat does not have underside protection, an additional test must be performed with the paper cushion placed on the floor underneath the seat.

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Certified by SQS, Certificate AS/EN 9100

SQS

Certificate

On behalf of Swiss Aerospace Sector Certification Scheme

SQS accredited under the Aerospace Registration Management Program herewith certifies that the organisation named below has been audited in accordance with the requirements of EN 9104-001:2013 and has a management system which meets the requirements of the standards specified below.

Lantal Textiles AG
Dorfgasse 5
4900 Langenthal
Switzerland

Further sites according to appendix

Several Sites

Scope

Design, production and sales of textile solutions for commercial and private aircraft

EN 9100:2018
equivalent to
AS9100 D
JISQ 9100:2016

Normative base

Quality Management System – Requirements for Aviation, Space and Defence Organisations
Requirements based on ISO 9001:2015

Reg. no. H40347
Page 1 of 2

Issue date 18. 12. 2022
Expiry date 17. 12. 2025
Re-issue date 12. 11. 2022

Date of audit 05. 09. 2022 – 07. 09. 2022

A. Grisard, President SQS

F. Müller, CEO SQS

Swiss Association for Quality and Management Systems (SQS)
Bernstrasse 103, 3052 Zollikofen, Switzerland

Swiss Made

Member of IQNET

4480_2 November 2019 Version 2.1

SQS

Appendix

Appendix of main certificate H40347

Lantal Textiles AG
Dorfgasse 5
4900 Langenthal
Switzerland

Central Function	*Scope*	*Norm / Revision*	*Reg. no.*	*Validity*
Lantal Textiles AG Dorfgasse 5 4900 Langenthal Switzerland	Design, production and sales of textile solutions for commercial and private aircraft	EN 9100:2018	H40347	18. 12. 2022 17. 12. 2025

Locations	*Scope*	*Norm / Revision*	*Reg. no.*	*Validity*
Lantal Textiles AG Berghofstrasse 1 4917 Melchnau Switzerland	Design, production and sales of textile solutions for commercial and private aircraft	EN 9100:2018	H40347	18. 12. 2022 17. 12. 2025

Reg. no. H40347
Page 2 of 2

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4480_2 November 2019 Version 2.1

Accreditation document fire test lab

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Federal Department of Economic Affairs,
Education and Research EAER
State Secretariat for Economic Affairs SECO
Swiss Accreditation Service SAS

Based on the Accreditation and Designation Ordinance dated 17 June 1996 and on the advice of the Federal Accreditation Commission, the Swiss Accreditation Service (SAS) grants to

Lantal Textiles AG
Fire Test Lab / Brandprüflabor
Dorfgasse 5
4900 Langenthal

Period of accreditation:
13.11.2022 until 12.11.2027
(1st accreditation: 13.11.2012)

the accreditation as

Testing laboratory for fire tests in the field of railway and aviation typical testing

International standard: ISO/IEC 17025:2017
Swiss standard: SN EN ISO/IEC 17025:2018

3003 Berne, 04.11.2022
Swiss Accreditation Service SAS

pp

Head of SAS
Konrad Flück

SAS is a signatory of the multilateral agreements of the European co-operation for Accreditation (EA) for the fields of testing, calibration, inspection and certification of management systems, certification of personnel and certification of products, processes and services, of the International Accreditation Forum (IAF) for the fields of certification of management systems and certification of products, processes and services and of the International Laboratory Accreditation Cooperation (ILAC) for the fields of testing, calibration and inspection.

About Lantal

Incorporated 1886

Production
Switzerland: Melchnau, Huttwil
USA: Rural Hall, NC
Portugal: Santo Tirso

Production Organization Approval to EASA Regulations Part 21 subpart G since 2005.

Quality management in Switzerland
Certified to AS/EN 9100:2009 / ISO 9001:2008
EQ-Net since 1992

Quality management in the USA
Certified to ISO 9001 BSI since 1997

Laboratory services
In-house laboratory established in 1978 to conduct tests according to the regulations of international civil aviation authorities. Extension of the range of laboratory services with various fire tests according to the European standard for rail vehicles EN 45545-2 since 2008. Accreditation according to EN ISO/IEC 17025 since 2012.

The laboratory also serves third parties.

Contact

Contact Lantal and discuss your needs with us. Rest assured that we can address your requirements.

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