

DLG Test Report 7286

Shenzhen Tubu Tech Co., LTD

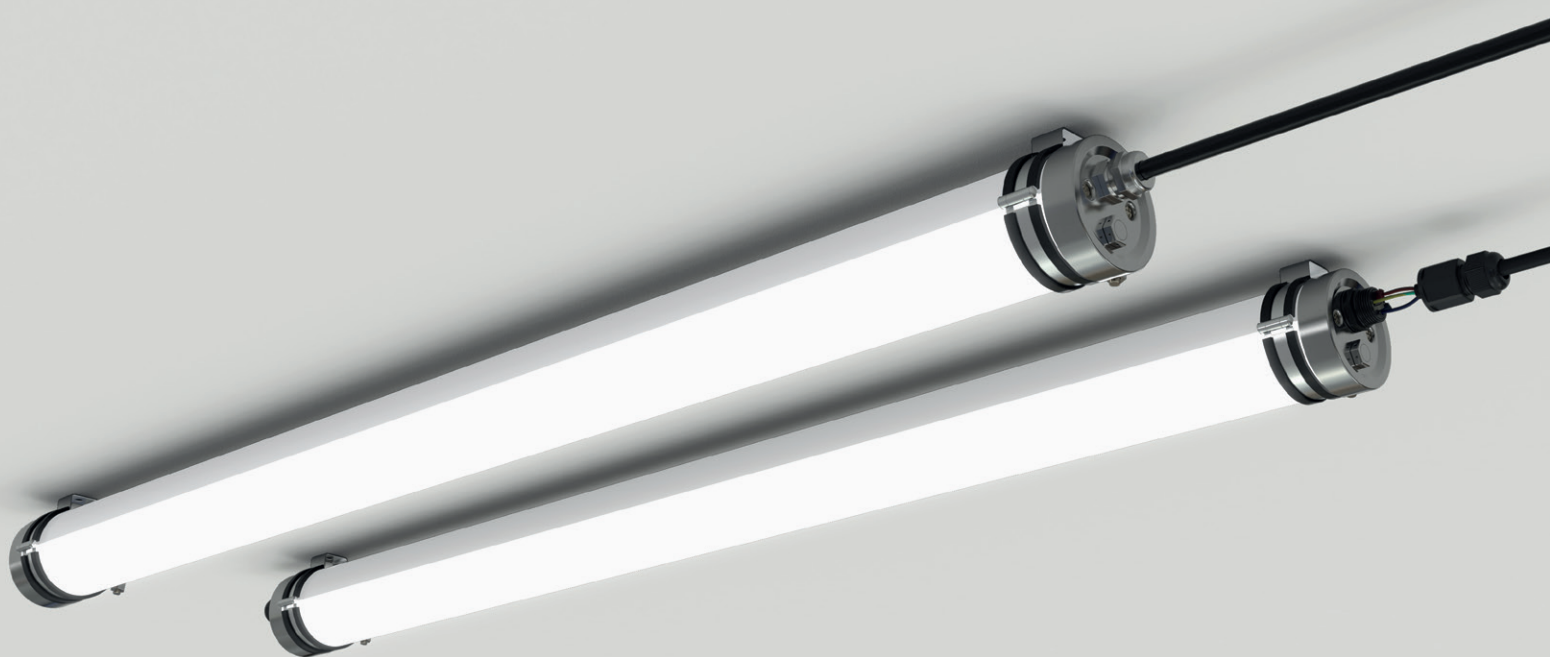
LED Tubular Light

Resistance to ammonia



TUBU
LED TUBULAR LIGHT
✓ Resistance to ammonia

DLG Test Report 7286



Overview

A test mark “DLG-APPROVED for individual criteria” is awarded for agricultural products which have successfully fulfilled a scope-reduced usability testing conducted by DLG according to independent and recognized evaluation criteria. The test is intended to highlight particular innovations and key criteria of the test object. The test may contain criteria from the DLG test scope for overall tests, or focus on other value-determining characteristics and properties of the test subject. The minimum requirements, test conditions and procedures as well as the evaluation bases of the test results will be specified in consultation with an expert group of DLG. They correspond to the recognized rules of technology, as well as scientific and agricultural knowledge and requirements. The successful testing is concluded with the publication of a test report, as well as the awarding of the test mark which is valid for five years from the date of awarding.



The ammonia resistance test was performed as a laboratory test according to the patented DLG test standard. This test is intended to determine the suitability of equipment for animal living areas to withstand the impacts of animal environments.

Other criteria were not tested.

Assessment in brief

The LED Light “LED Tubular Light” from Shenzhen Tubu Tech Co., LTD has successfully completed the DLG test for ammonia resistance.

According to this result, it can be assumed that these luminaires are resistant to the typical environmental conditions of animal living areas and that no accelerated

reduction of the product lifetime will occur. In addition, LED Light “LED Tubular Light” was operated actively in the chamber for the entirety of the test.

No product damage was observed here.

Table 1:
Assessment in brief

DLG QUALITY PROFILE	Evaluation*
Ammonia resistance	■ ■ ■ ■ □
Preservation of the luminous flux	■ ■ ■ ■ ■

* DLG Evaluation range:
 ■ ■ ■ or better = meets, exceeds or significantly exceeds the established DLG standards
 ■ ■ = meets the legal requirements for marketability, ■ = failed

The Product

Manufacturer and Applicant

Shenzhen Tubu Tech Co., LTD
Building A, Longteng Road, Gaoqiao District, Pingdi Street, Longgang
Shenzhen, Guangdong
China

Product:

LED Light "LED Tubular Light" (material: PMMA)

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Description and Technical Data

The LED Light "LED Tubular Light" tested is suitable for use in animal housings and in agricultural farm buildings.

Table 2:

Technical data (according to manufacturer)

LED Tubular Light				
	TBL94F-40W	TBL95F-40W	TBL95F-50W	TBL95F-60W
Electrical connection				
Voltage	100-277V AC			
Frequency	50-60 Hz			
Performance	40 W	40 W	50 W	60 W
Dimension and weight				
Length	1,152 mm		1,452 mm	
Diameter without caps	70 mm			
Weight	1.5 kg		2.0 kg	
Additional technical data				
Number of LED modules	1			
Housing material	PMMA			
Protection rating	IP67 and IP69K			
Colour temperature	4,000 K			
Dimmable	no (0-10V/Dali dimming optional)			
Beam angle	120°			
Rated luminous flux	6,000 lm	6,000 lm	7,500 lm	9,000 lm
Luminous efficacy	150 lm/W			
Color rendering index (CRI)	> 80			
Ambient temperature	-20°C ... +40°C			
Impact resistance	IK08			
Rated service life	L70 > 54,000 hrs			

The Method

Resistance to ammonia

The ammonia resistance of the LED light “LED Tubular Light” was determined by a laboratory test with one luminaire according to the patented DLG test standard for agricultural use. The laboratory test is designed to replicate the conditions of a usage period of about 10 years exposure to animal living areas.

The test was carried out in a climate chamber under the following climate conditions:

Test duration	1500 h
Air temperature	70 °C
Relative humidity	70 %
Ammonia concentration	750 ppm

For assessing the ammonia resistance, each luminaire was examined visually, gravimetrically and the plastic parts additionally through measurement of the hardness (Shore D) before and after the climate testing. The luminaires have additionally been following a cycle of operation predefined by DLG (3 hours on, 1 hour off) in order to evaluate any thermal impacts caused by switch-on and -off procedures during ammonia fumigation. Furthermore the luminous flux was measured according to DIN EN 13032 before and after the fumigation in order to get additional information regarding the aging process.

In order to avoid overheating (> 70 °C), the luminaires could be operated at a reduced power level during the testing period.

For all test procedures, the LED Light “LED Tubular Light” in the length of 1,452 mm and at an input power of 40 W has been used. After the tests, the luminaires underwent visual examination to a reference sample that was identical in construction.

Die Testergebnisse im Detail

Resistance to ammonia

Visual test

The comparative visual examination after the ammonia exposure has shown minor discolorations outside the luminaire housing, but no negative impact on the luminaire performance needs to be expected. A slight deformation of the case could have been caused by the continuous thermal load.

During the test, the luminaire appeared to be sufficiently gas-tight. Nevertheless it cannot be ruled out, that a limited amount of ammonia respectively ammonium compounds could enter the luminaire housing. This has not been verified. Again, no negative impact on the luminaire performance needs to be expected.

The defects are rated as insignificant. The examination of the manufacturer's mounting parts didn't also show any defects.

Gravimetric test

Weight comparisons before and after the ammonia fumigation have not shown any measurable increases or decreases in weight. All determined changes were within the measurement uncertainty.

Hardness test

During the hardness test (Shore D) no measurable changes were observed. All determined changes were within the measurement uncertainty.

Functional test

No defects were observed. All luminaires worked after the conducted tests.

Preservation of the luminous flux

After completion of the test the luminaire still had a luminous flux of 91.1 %.

Based on the results of these tested parameters, the luminaire is evaluated as resistant to ammonia.

Summary

The results show that the LED Light "LED Tubular Light" fulfills the testing requirements for ammonia resistance and thus receives the test mark DLG-Approved. It can be expected that the luminaire is resistant to ammoniacal air in animal living areas and that no accelerated reduction of the product lifetime occurs.

The LED Light "LED Tubular Light" was operated both passively and actively during the ammonia fumigation in the test chamber and passed both tests successfully.

More information

Test implementation

DLG TestService GmbH,
Gross-Umstadt location, Germany
The tests are conducted on behalf of DLG e.V.

DLG test scope

DLG-approved single criteria test
“Ammonia resistance“ (current as of 03/2021)

Department

Agriculture

Head of Department

Dr. Ulrich Rubenschuh

Test engineer(s)

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DLG – the open network and professional voice

Founded in 1885 by the German engineer Max Eyth, DLG (Deutsche Landwirtschafts-Gesellschaft – German Agricultural Society) is an expert organisation in the fields of agriculture, agribusiness and the food sector. Its mission is to promote progress through the transfer of knowledge, quality standards and technology. As such, DLG is an open network and acts as the professional voice of the agricultural, agribusiness and food sectors.

As one of the leading organisations in the agricultural and food market, DLG organises international trade fairs and events in the specialist areas of crop production, animal husbandry, machinery and equipment for farming and forestry work as well as energy supply and food technology. DLG's quality tests for food, agricultural equipment and farm inputs are highly acclaimed around the world.

For more than 130 years, our mission has also been to promote dialogue between academia, farmers and

the general public across disciplines and national borders. As an open and independent organisation, our network of experts collaborate with farmers, academics, consultants, policymakers and specialists in administration in the development of future-proof solutions for the challenges facing the agriculture and the food industry.

Leaders in the testing of agricultural equipment and input products

The DLG Test Center Technology and Farm Inputs and its test methods, test profiles and quality seals hold a leading position in testing and certifying equipment and inputs for the agricultural industry. Our test methods and test profiles are developed by an independent and impartial commission to simulate in-field applications of the products. All tests are carried out using state-of-the-art measuring and test methods applying also international standards.

Internal test code DLG: 2203-0018

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