

DLG Test Report 7195

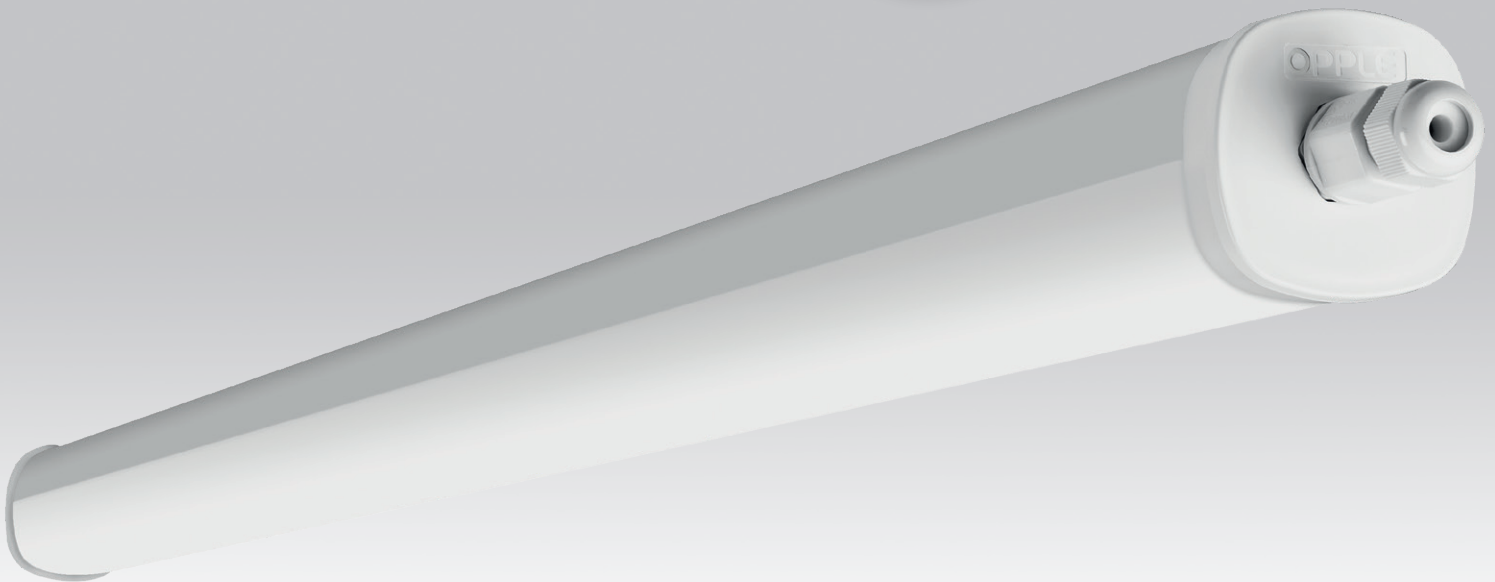
Opplé Lighting BV

LED Waterproof Special

Resistance to ammonia,
flicker free



**OPPLE LIGHTING
LED WATERPROOF SPECIAL**
✓ Resistance to ammonia
✓ flicker free
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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. In the “Flicker-free” test – if necessary also with different dimming levels – frequencies and the modulation depth of a luminaire’s flicker is measured. Since the corresponding stressor does not apply, flicker-free light has a positive effect on animal health.

Other criteria were not tested.

Assessment – Brief Summary

The LED Light “LED Waterproof Special” from Opplé Lighting BV has successfully completed the DLG test for ammonia resistance and flicker free.

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, the “LED Waterproof Special” was operated actively in the chamber for the entirety of the test. No product damage was observed here.

In undimmed state the “LED Waterproof Special” is almost flicker free.

*Table 1:
Assessment in brief*

DLG QUALITY PROFILE	Evaluation*
Ammonia resistance	■ ■ ■ ■ □
Flicker free, not dimmed	■ ■ ■ □ □

* 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

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Product:
LED Light "LED Waterproof Special"

Description and Technical Data

The LED Light "LED Waterproof Special" tested here is suitable for the use in animal housings and agricultural buildings.

Table 2:
Technical data (according to manufacturer)

LED Waterproof Special		
	SE-L1250	SE-L1550
Electrical connection		
Voltage	220-240 VAC	
Frequency	50/60Hz	
Performance	24/45 W	34/54 W
Dimension and weight		
Length	1.2 m	1.5 m
Diameter	73 mm	
Weight	1.7 kg	1.9 kg
Additional technical data		
Number of LED modules	1	
Housing material	PMMA	
Colour temperature	4000 K	
Dimmable	no	
Light angle	120°	
Rated luminous flux	3240/6075/4590/7290 lm	
Luminous efficacy	135 lm/W	

The Method

Resistance to ammonia

The ammonia resistance of the LED Light “LED Waterproof Special” 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.

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

Flicker free

The frequency and modulation depth of the flicker of two test samples for each type of luminaire were measured and assessed at full power. If the luminaire provided is dimmable and dimming is also recommended for practical use, the above tests were also carried out at 50 % and 10 % of the nominal power.

For all test procedures, the LED Light “LED Waterproof Special” in length of 1,550 mm has been used. After the tests, the luminaires underwent visual examination to a reference sample that was identical in construction.

The Test Results in Detail

Resistance to ammonia

Visual test: The comparative visual examination after the ammonia exposure has shown minor discolorations outside the luminaire housing. 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. 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.

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.

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

Flicker free

The frequency of the undimmed luminaire was 100 Hz (modulation depth 1.5%).

Summary

The results show that the LED Light "LED Waterproof Special" fulfills the testing requirements for ammonia resistance and flicker free 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 Waterproof Special" was operated both passively and actively during the ammonia fumigation in the test chamber and passed both tests successfully.

In undimmed state, the "LED Waterproof Special" meets the DLG requirements for flicker-free operation.

More information

Testing agency

DLG TestService GmbH,
Gross-Umstadt location, Germany

The tests are conducted on behalf of DLG e.V.

DLG test framework

DLG-Approved Test “Ammonia resistance”
(current as of 07/2018)

Department

Agriculture

Division head

Dr. Ulrich Rubenschuh

Test engineer(s)

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Photometric laboratory

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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: 2007-0073

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