

DLG Test Report 7373

Energetic Lighting GmbH

Eco-getic® TORKA FARM

Resistance to ammonia,
cleaning distance



**ENERGETIC
ECO-GETIC® TORKA FARM**
✓ Resistance to ammonia
✓ Cleaning distance
DLG Test Report 7373



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. The cleaning distance test assesses the suitability for cleaning animal living areas. Other criteria were not tested. As of 2017 the luminaires will be operated in the test chamber both passively (without power supply) as well as actively according to a determined test program.

Assessment – Brief Summary

The LED waterproof batten “Eco-getic® TORCKA FARM” from Energetic Lighting GmbH has successfully completed the DLG test for ammonia resistance and cleaning distance.

Table 1:
Overview of results

| DLG QUALITY PROFILE | Evaluation* |
|-----------------------|-------------|
| Resistance to ammonia | ■ ■ ■ ■ □ |
| Cleaning distance | ■ ■ ■ □ □ |

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 batten “Eco-getic® TORCKA FARM” was operated actively in the chamber for the entirety of the test. No product damage was observed here.

Furthermore, the cleaning distance is regarded as suitable for the cleaning of animal houses.

* The DLG test framework provides the following options in its evaluation schemes:
 ■ ■ ■ or better = meets, exceeds or clearly exceeds the specified DLG standard, ■ ■ = meets the legal requirements for marketability,
 ■ = failed

The Product

Manufacturer and applicant

Energetic Lighting GmbH
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Product:

LED waterproof batten "Eco-getic® TORKA FARM"

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Description and technical data

The tested LED waterproof batten "Eco-getic® TORKA FARM" is suitable for any usage in animal housing surroundings. The luminaire is suitable in intensive animal husbandry such as pigsties and cowsheds where high levels of ammonia-containing gases needs to be expected.

Table 2:

Technical data (according to manufacturer)

| Eco-getic® TORKA FARM | | | | |
|----------------------------------|--|---------|----------------------|---------|
| Product Model | FOB70800v1 | | FOB70900v1 | |
| | #710036 | #710880 | #710038 | #710495 |
| Electrical connection | | | | |
| Voltage | 220-240 VAC | | | |
| Frequency | 50/60 Hz | | | |
| Rated input power | 35 W | | 53 W | |
| Dimension and weight | | | | |
| Length | 1,272 mm | | 1,572 mm | |
| Width | 62 mm | | | |
| Height | 56 mm | | | |
| Weight | 982 g | | 1,147 g | |
| Additional technical data | | | | |
| Number of LED modules | 1 | | | |
| Housing material | diffuser: PMMA, side panels: polyamide | | | |
| Colour temperature (CCT) | 4,000 K | 6,500 K | 4,000 K | 6,500 K |
| dimnable | no | | | |
| Light angle | 120° / 160° | | | |
| Luminous efficacy (CRI) | 115 lm/W or 119 lm/W | | 119 lm/W or 123 lm/W | |

The Method

Resistance to ammonia

The ammonia resistance of the LED waterproof batten “Eco-getic® TORKA FARM” 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. Since 2017, 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.

Cleaning distance

During test bench examinations of the mechanical resistance to high-pressure cleaners, the minimum cleaning distance was determined.

The minimum cleaning distance is defined as the distance between nozzle and surface when no damages can be observed at the housing surface.

The test was conducted under the conditions presented in table 3.

Table 3:

Test conditions cleaning distance

| | |
|---------------------|--|
| Line pressure | ~150 bar |
| Water | cold, approx. 1,000 l/h, no detergents |
| Nozzle type | Flat spray nozzle, 25° |
| Exposition time | 1 minute |
| Distance | 250 mm, 200 mm, 150 mm, 100 mm, 50 mm |
| Ambient temperature | 10°C |

For all test procedures, the LED waterproof batten “Eco-getic® TORKA FARM” in length of 1,572 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 at the luminaire housing. However, the lights were deformed. Even if there is no change in their properties to be expected, a three-point suspension or a strain relief (carefully lay the supply line) is recommended for lights with a length of 1,572 mm.

During the test, the tube light appeared to be sufficiently gas-tight. Nevertheless it cannot be ruled out, that a limited amount of 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.

Cleaning distance

Even at a cleaning distance of only 15 cm, no damages to the luminaire could be observed.

At no time a water ingress into the luminaires was noticed.

In order to avoid damage to the luminaires during cleaning reliably, according to the manufacturer's specifications a minimum cleaning distance of 15 cm should always be ensured.

Summary

The results show that the LED waterproof batten "Eco-getic® TORKA FARM" fulfills the testing requirements for ammonia resistance and cleaning distance 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 batten "Eco-getic® TORKA FARM" was operated both passively and actively during the ammonia fumigation in the test chamber and passed both tests successfully.

It is also recommended in any case to keep a minimum distance of 15 cm during cleaning.

Other criteria have not been assessed.

More information

Testing agency

DLG TestService GmbH, Gross-Umstadt location
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)

Dipl-Ing (FH) Tommy Pfeifer*

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DLG – the open network and professional voice

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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

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