

DLG Test Report 7431

Ensto Building Systems

FLIP Chemical

Resistance to ammonia



ENSTO BUILDING SYSTEMS
FLIP CHEMICAL

✓ Resistance to ammonia

DLG Test Report 7431



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 “FLIP Chemical” from Ensto Building Systems 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 “FLIP Chemical” 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	<div><div></div><div></div><div></div><div></div><div></div></div>
Preservation of the luminous flux	<div><div></div><div></div><div></div><div></div><div></div></div>

* 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

Ensto Building Systems Finland Oy, A brand of Legrand
Ensio Miettisen katu 2
P.O. Box 77
06101 Porvoo
Finland
VAT No. FI31150829

Product:
LED Light "FLIP Chemical"

Contact:
Phone +358 (0)204 76 21
www.legrand.fi

Description and Technical Data

The LED Light "FLIP Chemical" is suitable for use in animal living areas and in agricultural farm buildings.

Table 2:

Technical data (according to manufacturer)

FLIP CHEMICAL		
	FL121RO...	FL151RO...
Electrical connection		
Voltage	220-240 V AC	
Frequency	50/60 Hz	
Rated input power	21 ... 42 W	26 ... 52 W
Dimension and weight		
Length	1,253 mm	1,533 mm
Height x width	76 mm x 86 mm	
Weight	2.2 kg	2.6 kg
Additional technical data		
Number of LED modules	1	
Material	Housing: PC, End parts: ABS	
Protection rating	IP66	
Colour temperature (CCT)	3,000 K / 4,000 K / 5,000 K	
Rated luminous flux	3,170 ... 6,010 lm	3,960 ... 7,520 lm
Luminous efficacy	143 ... 151 lm/w	145 ... 152 lm/W
Color rendering index (CRI)	> 80	
Ambient temperature	-40°C ... +35°C	
Impact resistance	IK08	
Rated service life	L80 > 100,000 hrs	
dimmmable	on/off or DALI	

The Method

Resistance to ammonia

The ammonia resistance of the LED light “FLIP Chemical” 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 the approval of all luminaires in table 2, the LED Light “FLIP Chemical” in the length of 1,533 mm and at an input power of 52 W was tested. 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.

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 88,5 %.

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

Summary

The results show that the LED Light "FLIP Chemical" 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 "FLIP Chemical" 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
“Leuchtsysteme in Ställen“ (current as of 03/2021)

Department

Agriculture

Head of Department

Dr. Ulrich Rubenschuh

Test engineer(s)

Dipl.-Ing. (FH) Tommy Pfeifer*

Photometric laboratory

Photometrik GmbH, Einsteinstraße 24
64859 Eppertshausen, Germany

* Author

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: 2306-0017

Copyright DLG: © 2023 DLG



DLG TestService GmbH
Groß-Umstadt location

Max-Eyth-Weg 1 • 64823 Groß-Umstadt • Germany
Phone: +49 69 24788-600 • Fax: +49 69 24788-690
Tech@DLG.org • www.DLG.org

Download of all
DLG test reports free of charge
at: www.DLG-Test.de