



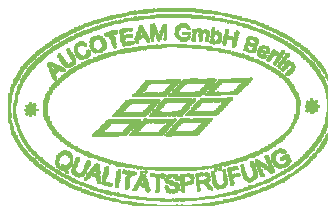
Testing laboratory for climatic, mechanical
and corrosive environmental stress

QUALITY TEST CERTIFICATE

Test report – No. 19-14770

Client	AMVIS Vitalii Kaplunenko Emil-Krag-Straße 26 65205 Wiesbaden-Erbenheim	
Equipment under test	LED cobblestone	Magnum AM 11411*
	Quantity	1 sample
	LED cobblestone	Spot AM 22612*
	Quantity	1 sample
	Status	May 2019
Purpose	Test for the certification of the impact resistance with 2 Joules (IK07)	
Test programme	Impact resistance	IK07 according to DIN EN 50102
Test date	28 May 2019	
Execution / Results	see pages 2 to 3	
Total number of pages	4 (including 1 appendix)	
Test results	The test was performed according to the specifications of the standards. Further evaluation will be done by the client.	

Dipl.-Ing. (FH) Ch. Kretschmer
Head of the testing laboratory
Berlin, 04 June 2019



M. Jedamski
Test operator

1 Purpose

Certification of the impact resistance for the **LED cobblestones** according to the specifications of the standards and to the demands of the client.

2 Equipment under test

LED cobblestone	Magnum AM 11411*
Quantity	1 unit (sample No.2)
LED cobblestone	Spot AM 22612*
Quantity	1 unit (sample No.4)
Status	May 2019
Arrival date of the samples	10 May 2019

3 Basics

3.1 Demands of the client

3.2 Used standards

IEC 60068-1:2013 **DIN EN 60068-1; VDE 0468-1:2015-09**
“Environmental testing - Part 1: General and guidance”

EN 50102:1995 **DIN EN 50102; DIN EN 62262; VDE 0470-100:1997-09**
“Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)”

4 Test programme

Impact resistance test – IK07

according to EN 50102 and to the demands of the client

Samples No.2 + No.4	not in operation
Test temperature	(23±3) °C
Impact element	spring hammer
Test energy	2 Joule
Mass	0.5 kg
Test area	top
Number of impacts	5 impacts
Test position	standing vertically, connections on the bottom

Visual inspection

Before and after each impact the corresponding sample will be examined for external damage and any other alterations.

5 Execution

The impact resistance test for the **LED cobblestones** was performed according to the test programme, in compliance with the specifications of the standards and with the demands of the client.

Visual inspection

Before and after each impact the sample was examined for external damage and for any other alterations.

Acceptance criteria

The impact resistance is given if after the completion of the test no external damage or alterations are detected visually.

Measurement and test devices

Name	Type	Serial-No.	Manufacturer
Spring hammer IK07	F 22.20-	5140044	PTL

6 Results

The certification of the impact resistance for the **LED cobblestones** with

- Impact resistance test Test IK07 according to EN 50102

was performed according to the test programme.

The results of the impacts are shown in the following table:

Sample	Impact No. (impact) / impact point results / evaluation
No.2	11. Impact (S11): Top surface, central • Inner material chipped, surface smooth and without cracks. OK
	12. Impact (S12): Top surface, top left corner • Inner material chipped, surface smooth and without cracks. OK
	13. Impact (S13): Top surface, bottom right corner • Inner material chipped, surface smooth and without cracks. OK
	14. Impact (S14): Top surface, side edge on the top, central • Inner material chipped, surface smooth and without cracks. OK
	15. Impact (S15): Top surface, side edge on the right, central • Inner material chipped, surface smooth and without cracks. OK
No.4	16. Impact (S16): Top surface, central • no visible damage OK
	17. Impact (S17): Top surface, side edge on the top • Inner material chipped, surface smooth and without cracks. OK
	18. Impact (S18): Top surface, side edge right • Inner material chipped, surface smooth and without cracks. OK
	19. Impact (S19): Top surface, side edge bottom • Inner material chipped, surface smooth and without cracks. OK
	20. Impact (S20): Top surface, side edge left • Inner material chipped, surface smooth and without cracks. OK

**The tests were performed according to the specifications of the standards.
Further evaluation will be done by the client.**

The results of the tests refer only to the above mentioned equipment under test. This report, or individual pages of this test report, may only be copied following the written consent of the testing laboratory. This test report No. 19-14770 includes 3 pages and 1 appendix – Pictures (1 page).

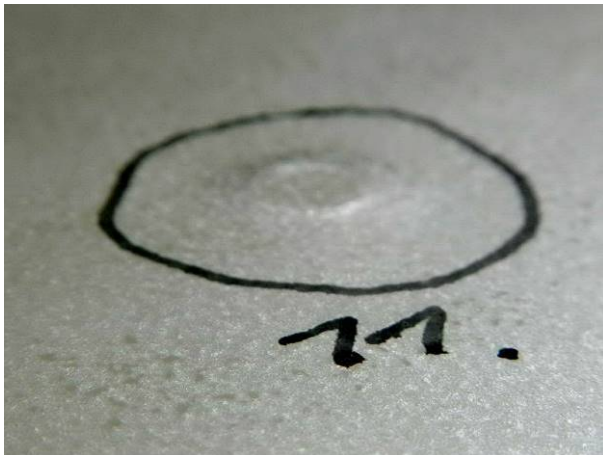
Pictures



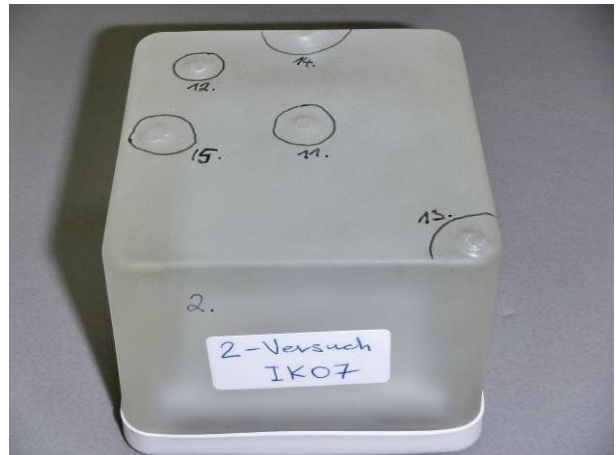
Picture 1
LED cobblestones, samples No.2 and No.4 with spring hammer 0.5 kg | 2 Joule before the impact test IK07



Picture 2
Sample No.2 with spring hammer on the test area during the impact test IK07 (Impact S6)



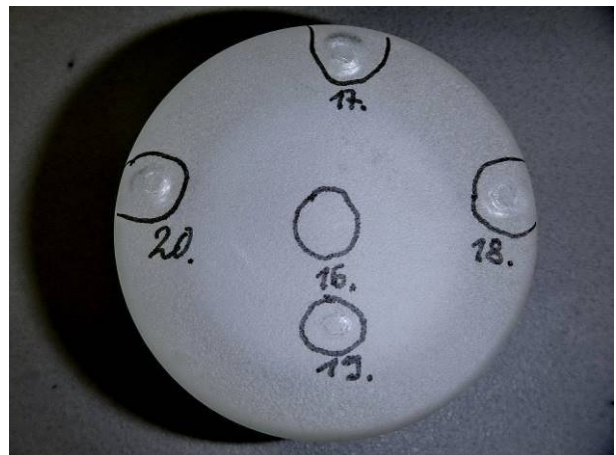
Picture 3
Sample No.2 with visible chip on the material and no cracks on the surface after the impact test IK07 (Impact S11)



Picture 4
Sample No.2 with visible chips on the material and no cracks on the surface after the impact test IK07 (Impacts S11 – S15)



Picture 5
Sample No.2 with visible chips on the material and no cracks on the surface after the impact test IK07 (Impacts S16 – S20)



Picture 6
Sample No.2 with visible chips on the material and no cracks on the surface after the impact test IK07 (Impacts S16 – S20)