



Test-Report

k-labor number: K11631

Customer: Element Materials Technology
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Order Date: 26.09.2017
Customer order number: -

Reason for investigation: Quality assurance
Aim of investigation: UV irradiation according to ISO 4892

Sample / Artifact: elements
Delivered number of parts: 4
Receipt at laboratory: 26.09.2017

Approval of Test Report:

This report contains 4 pages.

Responsible project manager: Dr.-Ing. Thibaut Gérard - Materials engineering

Laboratory management: Heinz Kellner

Date: Bretten, September 29th 2017

Remarks: -

Definition of task

UV irradiation with weathering according to ISO 4892 - method A, for a total of 600 hours with intermediate evaluation after 450 hours (Shore A and Shore D).

Implemented investigation

The listed investigation was performed at our partner laboratory Société Exotest France, Compiègne, in the period from September 26th, 2017 to November 27th, 2017.

1. Xenon arc radiation according to ISO 4892 - Method A

Remark on subcontracted inspection:

- Société Exotest France, Compiègne

Ambient conditions

Sample-taking, preparation and testing were performed according the test specifications, standards and / or customer specification.

Sample / Artifact

The samples arrived at k-labor GmbH undamaged and were prepared and documented for the investigations.



Picture 1: Overview of element 10251 in delivery conditions



Picture 2: Overview of elements 10252, 10253, 10254 prepared for the test



1. Xenon arc radiation according to ISO 4892 - Method A

The test was operated with following test parameters:

Table 1: Test parameters of Xenon arc radiation

Specification	Test time	Operator
ISO 4892-2 – Method A	600 hours	Loic Lerouge

This method defines the conditions to be respected in determining the resistance of a material to the effect of an artificial light source under defined sprinkling and temperature conditions. The method is an attempt to reproduce the ageing of materials when exposed to light and bad weather.

Parameters:

Unit used: CI35, Supplier: Atlas

Light energy: 0,51 +/- 0.02 W/m² at 340nm

Surface temperature: 65°C +/- 3 °C during the period without watering

Chamber temperature: 38°C +/- 3 °C

Relative humidity: 50 +/- 10 %

Rain period: 18 mn rain followed by 102 mn dry

Standard used for the grey scale cotation: ISO 105-A02: 1993

Standard used for the colorimetric measurement: ISO 7724: 1984

Device used for the colorimetric measurement: spectrophotometer CM2600d

Standard used for the gloss measurement: ISO2813: 1994

Device used for the gloss measurement: Byk Gardner micro-TRI gloss ou micro-gloss 60°

Results of Xenon arc radiation test according to ISO 4892 - Method A

Table 2: Results of Xenon arc radiation test according to ISO 4892 - Method A

Sample reference	Optical evaluation	Evaluation Shore Hardness A & D (ISO 7619-1)		
		delivery	450 h	600 h
10252	No visual change	89 (Shore A) 53 (Shore D)	93 (Shore A) 59 (Shore D)	94 (Shore A) 60 (Shore D)
10253	No visual change	85 (Shore A) 52 (Shore D)	93 (Shore A) 56 (Shore D)	95 (Shore A) 56 (Shore D)
10254	No visual change	74 (Shore A) 48 (Shore D)	83 (Shore A) 51 (Shore D)	85 (Shore A) 56 (Shore D)

**Pictures of the tested elements before and after the test**

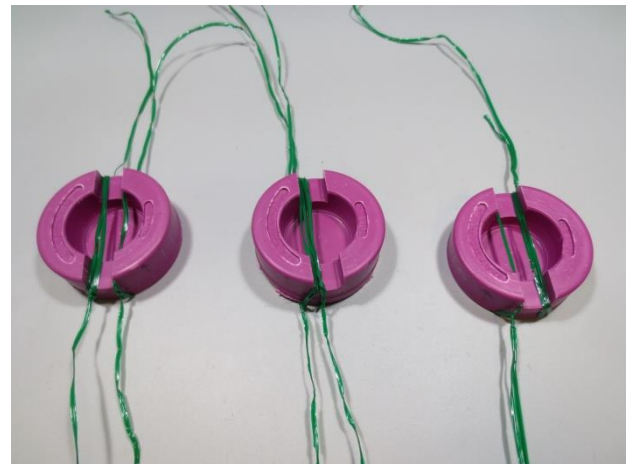
Picture 3: Element 10252 before the test



Picture 4: Element 10253 before the test



Picture 5: Element 10254 before the test



Picture 6: Elements 10252, 10253 and 10254 after 600 hours of UV irradiation