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Applicant/Deney Sahibi : Mutlusan Plastik Elektrik San. Ve Tic. A.Ş.
Applicant Address/ Adres: İkitelli Org. San. Bölgesi Mah. Enkoop Cad. No:7 Başakşehir/İstanbul
Contact Person / Yetkili : Mustafa Keskin
Contact Telephone / Telefon: --
Contact e-mail / E-Posta: --
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Sample ID : Spiral Pipe PA

	TEST/INSPECTION	DIRECTIVE	METHOD	RESULT
*	Plastics - Methods Of Exposure To Laboratory Light Sources - Part 2: Xenon-Arc Lamps	The General Product Safety Directive (GPSD) (2001/95/EC)	ISO 4892-2	PASS

NOTE: This test result replaces the conformity assessment, can be presented to official institutions, and used in products and brochures.



Seal

Customer Representative
Merve Nur KIRVELİ

Laboratory Manager
Merve ÖZLÜ

Test/Inspection Test results, methods and other information about the sample shown in the relevant pages of this Report are based on the information specified in accordance with "Test/Inspection Test Request Form (PR03-F01) conveyed to us from the Applicant. Test/Inspection Test results are valid for the sample as identified above. Sample may not represent the lot which it belongs. This Report does not replace a Product Certificate. Full report or any part of it may not be reproduced or used for any other purpose without the written permission of EUROLAB Laboratory. Sampling has not been done by us. Unsigned and unsealed Reports are invalid. Analysis as indicated with "*" are in the Scope of our Accreditation Certificate issued from UAF according to TS EN ISO/IEC 17020, 17025, Analysis as indicated with "***" are performed at the external laboratories using accredited Test/Inspection Test methods according to EN ISO/IEC 17020, 17025 from UAF. Possible extra notes may add with starting N¹ to related pages. Test/Inspection Tested and remaining samples will be kept in specified terms & conditions at Test/Inspection Test request and/or proposal form. Physically, chemically and microbiologically decomposed samples are discarded regardless of the storage period. Applicant can not claim any right in this regard. Results are shown in this Report do not include Measurement Uncertainty values. Measurement Uncertainty values are not taken in consideration during Pass/Fail assessment the of Test/Inspection Test results shown in this Report. Evaluation of the Test/Inspection Test results using Measurement Uncertainty values is the responsibility of the Applicant.
PR33-F01/08.10.2015/Rev:17.01.2017-R01

ISO 4892-2 : Plastics - Methods Of Exposure To Laboratory Light Sources - Part 2: Xenon-Arc Lamps

Scope

This part of ISO 4892 specifies methods to expose samples to xenon arc light in the presence of moisture to produce weathering effects (temperature, humidity and / or wetness) that occur when materials are exposed to sunlight or light in actual end use environments.

Test Procedure

Samples are attached to the sample holders in the equipment so that they are not subjected to any applied pressure. Each test sample is identified by appropriate indelible marking, avoiding the areas to be used in subsequent tests. As a control, a plan of test sample positions is made. If desired, in the case of samples used to determine the change in color and appearance, some of each test sample is protected with an opaque cover throughout the exposure. This gives an unexposed area adjacent to the exposed area for comparison. This is useful for checking the progress of exposure, but reported data should always be based on comparison with file samples stored in the dark.

Before placing the samples in the test chamber, it is ensured that the device operates under the desired conditions. The device is programmed with the conditions selected to run continuously for the required number of cycles under the selected exposure conditions. These conditions are maintained during exposure. If a test sample needs to be removed for periodic inspection, care is taken not to touch or alter the exposed surface in any way. After inspection, it is placed in the sample holder or in the test chamber, with the exposed surface as before.

EXPOSURE CONDITIONS

Radiation:

Exposures using daylight filters (artificial weather conditions)						
Loop No.	Exposure Time	Brightness		Black Panel Temperature °C	Room Temperature °C	% Relative Humidity
		Broadband (300 nm to 400 nm) W / m ²	Narrow Band (340 nm) W / (m ² nm)			
1	102 min dry	60 ± 2	0,51 ± 0,02	63 ± 3	38 ± 3	50 ± 10b
	18 min water spray	60 ± 2	0,51 ± 0,02	—	—	—

Radiant Exposure Measurement

If used, mount and calibrate the radiometer to measure the radiation on the exposed surface of the test sample. When using radiant poses, express the exposure range in radiant energy per unit area of the exposure plane, joule per square meter (J / m^2), in the wavelength band, in 300 nm to 400 nm. Square meter [$J / (m^2 \cdot nm)$] per nanometer at selected wavelength (eg 340 nm).

Determination of Color Changes Or Other Appearance Properties

General Changes

When a polymeric material is exposed to UV radiation and other moderate environmental stresses, the change in most physical properties can be attributed to chemical aging, and the extent of chemical changes may be related to the duration of natural outdoor or artificial weather exposure.

Color Changes

Gray scale method is used to determine the color changes in the sample. At this scale, Class 1 corresponds to the strongest contrast and grade 5 zero contrast (two samples of the same color). The dark gray scale is well suited to assess the degree of fading of relatively strong colors or deep hues. The use of the near white gray scale is preferred for evaluating the color change, such as yellowing of white or near white samples.

The contrast degrees of the exposed sample and file samples are compared using the gray scale. The degree of color change is the degree on the gray scale that shows the same contrast between the exposed test sample and an unexposed file sample of the same material.

For Color Changes	For Saturation Changes	For Lightness Changes
More blue or less blue More green or less green More red or less red	Less intense Busier	Light Black

Tag			
Test		Color Values Before Test	Color Values Post-Test
UV	L:	5.96	6.42
	a:	-2.65	-2.49
	b:	-1.16	-1.10
	Brightness	0001.2 gu	0000.5 gu
$\Delta E: 0.49$			

Test Item: Rapid Aging Test-Xenon-arc

Exposure Example Description: Spiral Pipe PA

Test Method: ISO 4892-2 Loop 1

Exposure cycle

ISO 4892-2: cycle 1

Irradiation: (0,51 ± 0,02) W / (m².nm) at 340nm 45 days , (38 ± 3) °C and (50 ± 10)% RH

Filter: Daylight - XENON ARC

Exposure time : 45 days (5 year)

Delta E is a standard measurement established by the Commission Internationale de l'Eclairage (International Commission on Illumination) that measures the difference between two colors appearing on a product.

1.0 ≤ Not detectable by human eyes

1-2 Can be detected through close observation

2-10 Can be detected at a glance

11-49 Colors are more similar than opposite

100 Colors are the opposi

Test Sample	UV Exposure Time	Gray Scale
Spiral Pipe PA	45 days (5 year)	5-4
According to ISO 105-A02: 1993 / Cor.2: 2005, under the gray scale D65 standard light, the best scale was determined as 5 and the worst scale as 1.		
The results were performed within 1 hour after the specified times at the end of the exposure, as well as the interim examination.		

Sample Image



Spiral Pipe PA

*****End of Report*****