ELECTROTECHNICAL TESTING INSTITUTE
Pod Lisem 129
171 02 Praha 8 - Troja

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No. of the Test Report: 500482-01/01

Issued: 26. 3. 2015

TEST REPORT

Name of product:	Flexible plastic tubing for air conditioning equipment
Type of product:	PE HD with the additive
Ratings:	---
Serial number:	Not specified
Manufacturer:	MATEICIUC a. s., Ke koupališti 370/15, 74235 Odry, Czech republic
Production site:	Not specified
Ordering firm:	MATEICIUC a. s., Ke koupališti 370/15, 74235 Odry, Czech republic
Number of tested samples:	1
Samples submitted on:	5. 2. 2015
Location of testing:	EZÚ
Tested from	23. 2. 2015 **through** 26. 3. 2015
Other data:	---
The product was tested according to:	ČSN EN ISO 846:1998, article. 4.2.1 a 4.2.2. Method A and method C

Compiled by: M. Hájková

elektrotechnický zkušební ústav ezú -11- zkušební laboratoř

Approved by: J. Bažant
Testing laboratory technical manager

Description of the specimen:

The microbiological test was delivered flexible plastic tubing for air conditioning equipment. Type: material PE HD with the additive.

Testing:

Test of Plastic – Evaluation of the action of microorganisms was performed according to ČSN EN ISO 846:1998, article 4.2.1 and 4.2.2. On the samples were carried out method A (fungal-growth test) and method C (resistance to bacteria).

For this type of sample and the two methods, prepare three batches of specimens of five pieces (inoculated, sterile, control). The samples are adjusted to the size of about 30 x 30 x 1 mm. The exposure of test samples are cleaned by immersion for 1 minute in a mixture of ethanol with water in the ratio 70:30 and at 45 °C dried for 4 hours. Cleaned test specimens shall be kept in sterile Petri dishes at ambient temperature.

Test **strains of fungi** for method A shall be obtained from the National Collection of Microorganisms:

Aspergillus niger van Tieghem (ATCC 6275)
Penicillium funiculosum Thom (CMI 114933)
Paecilomyces variotii Bainier (ATCC 17502)
Gliocladium virens Miler et al. (ATCC 9645)
Chaetomium globosum Kunze (ATCC 6205)

Test **strains of bacteria** for method C´ that come from the National Collection of Microorganisms: *Pseudomonas aeruginosa* (ATCC 13388)

Method A – fungal-growth test

Test specimens are exposed to a mixed suspension of fungus spores in the presence of incomplete nutritive medium. Inoculated and sterile specimens are incubated at a temperature (29 ± 1) °C and relative humidity > 95% for 28 days.

Method C – resistance to bacteria

Test specimens are completely casted in incomplete nutritive medium mixed with suspensions of bacterial cells. Inoculated and sterile specimens are incubated at a temperature (29 ± 1) °C and relative humidity > 95% for 28 days.

Testing equipment:	Scales DENVER SI-4002A	inv. No. 551150
	Incubator CLIMACELL	inv. No. 110113
	Autoclave VAPOSTERI	inv. No. S 107
	Centrifuge UNIVERSAL 32 R	inv. No. 110052
	Stereoscopic microscope LEICA M80	inv. No. 110264
	Laminar box GELAIRE	inv. No. 4846
	Hot air sterilizer	inv. No. 4244

Evaluation: see also photo-documentation

Method A – fungal-growth test

Sample	Duration of incubation (days)			
	7	14	21	28
	0	0	0	1

scale assessment of mould growth on the specimens:

0 - no growth, or is not visible under the microscope
1 - growth visible under the microscope (small scattered colonies mould
2 - growth visible to the naked eye covering up to 25 % of the test surface
3 - growth visible to the naked eye covering up to 50 % of the test surface
4 - significant growth covering more than 50% of the test surface
5 - rich growth covering the entire surface to be tested

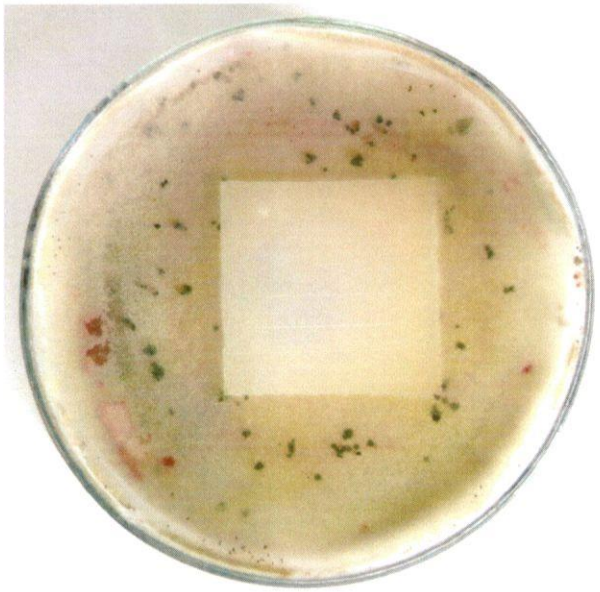
For sample plastic tubing there was a slight growth of fungi, the material contains nutritive substances or is contaminated to such a small degree that it permits only slight growth of microorganisms.

Method C – resistance to bacteria

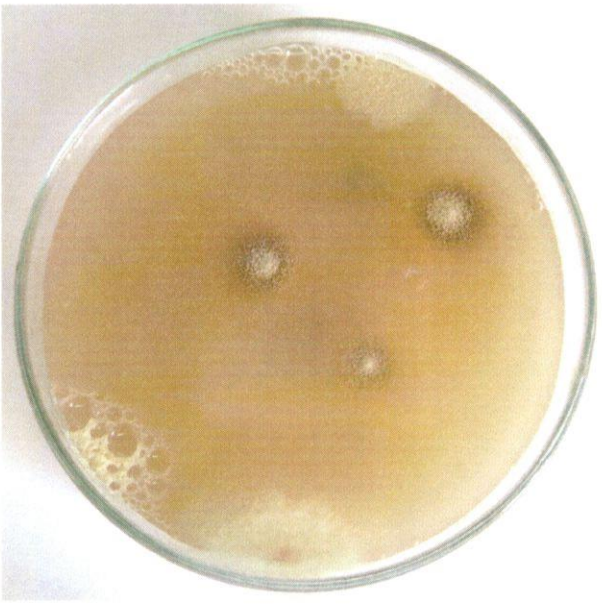
Sample plastic tubing increased *Pseudomonas aeruginosa* colonies in agar. But around the test specimens to an increase occurred. The material does not contain any nutritive substances for bacterial growth.

Photo-documentation:

Sample plastic tubing after the test, according to method A and method C.



method A



method C

Test Result:

The submitted specimens were subjected to the above-mentioned test. The sample plastic tubing is complies with the standard. Detailed evaluation and functional test will be carried out through the client.

Tested by: M. Hájková