



English version without legal liability

Test Report C 09 0007.3

1st copy

Applicant: Eastern Polymer Industry Co., Ltd.
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Order of: 12/17/2008 Party ordering/reference: **PO-0810709-1**

Application re: Testing of the insulation material with the designation
"AEROFLEX/AEROCEL"
 for leachable chlorides, nitride and ammonia

Material tested: - a section of a black foamed rubber tube with a wall thickness of approx. 50mm

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 linguistical provisions to this English research report – in particular within legal
 procedures – MPA Darmstadt reserves the right of explanation in German language.

Sampling: The test material was delivered by the costumer.

Samples received: 12/29/2008

Sample whereabouts: The test material will be disposed after six month.

Staatliche Materialprüfungsanstalt
 Werkstoffanalytik
 Grafenstraße 2, 64283 Darmstadt

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Date of the report: 01/28/2009 Reference: C/HI/hl

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1 Object of the Testing

The task was to test a section of an insulation material labelled "AEROFLEX/AEROCEL" to establish a quantitative assessment of its level of water-extractable chloride, ammonia as well as nitride contents with a view to prevent stress crack corrosion on copper and chromium-nickel materials for a rating as per DIN 1988 part 7, edition December 2004. Simultaneously, the pH value of the aqueous extract is tested.

The following sample material was forwarded by the applicant for the purpose of testing:

- one section of a black foamed insulation tube with a wall thickness of approximately 50mm in a plastic bag labelled "Sample Name: AEROFLEX/AEROCEL, Type of Test: DIN 1988 Part 7, Sampling By: Mrs. Patcharaporn"

2 Performance of the Testing

Determination of water-extractable chloride, nitride and ammonium contents as well as of the pH value of the aqueous extracts

The extraction was conducted using a process proposed for the measurement of water-extractable ammonia in foam insulation material (gwf - Wasser, Abwasser, 126 (1985) H.9, page 498):

"Ten grams of the sample material, cut into approximately 10-mm cubes, is placed in a 1-litre beaker (tall version) with 300ml of deionized water. The beaker is covered with a beaker cover, heated to 80°C while being stirred with a magnetic stirrer, and kept at that temperature for 1 hour. Then the water is poured out and the sample material rinsed three times with 50ml of water each time. In the total extract or an aliquot part, chloride, nitrite and ammonium levels are measured using the standard procedure, and expressed as mass percentages of the insulating material."

3 Results

The test conducted on the material sample of "**AEROFLEX/AEROCEL**" in the way as described in chapter 2 yielded the following levels - expressed as mas.-% - after filtration and potentiometric respectively photometric analysis of the eluate as means of double determinations.

Parameter	AEROFLEX/AEROCEL
Ammonia (NH ₃)	0.04 ± 0,02
Nitride (NO ₂ ⁻)	<0.0001
Chloride (Cl ⁻)	0.016 ± 0.002

Table No. 1

Furthermore, the following pH value was determined:

pH Value
8,05 ± 0.10

Table No. 2

4 Assessment

According to standard DIN 1988 ("Technical Rules for Drinking Water Installations, Prevention of Corrosions Damage and Calculus Build-up"), part 7, paragraph 7.4 „Tube Systems in Buildings“, Version of December 2004, the following requirements have been specified, among other things:

"Insulating materials for tubes of stainless steels must not exceed a mass content of 0.05% of water-soluble chloride ions (compare also AGI Q 135)."

Furthermore, it says:

„Insulations for copper materials must be free of nitride and must not contain an ammonia mass content of more than 0.2%.“

These requirements are completely fulfilled by the tested insulation material labelled **"AEROFLEX/AEROCEL"**.

