



THE SCIENTIFIC AND TECHNOLOGICAL RESEARCH COUNCIL OF TURKEY
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MATERIALS INSTITUTE

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TEST REPORT
(Industrial Services)

Report no : 20684700-125.05 -770/6836
Report date : 14 9 Aralık 2017
Requested by : ECE BOYA KİMYA SANAYİ ve TİC. A.Ş.
Address : İstanbul Organize Deri Sanayi Bölgesi Karadeniz Cad. No:9 Aydınlı-Orhanlı
34957 Tuzla / İstanbul
Subject : Flammability Test

The results in this report are valid only for the analyzed samples.

Approved by

Dr. Özgür DUYGULU
Assigned for Industrial Services of Materials Institute

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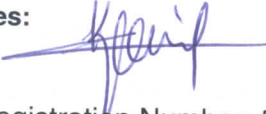
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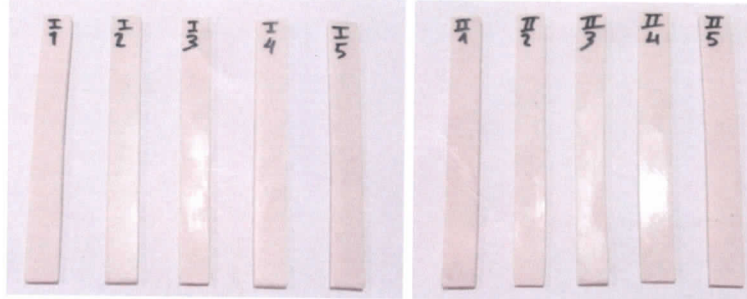
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|---|---|--------------------------------------|-----------------------------|
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| Address | : İstanbul Organize Deri Sanayi Bölgesi Karadeniz Cad. No:9 Aydınlı-Orhanlı 34957 Tuzla / İstanbul | | |
| Sample | : E-7 FR OLYESTER REÇİNE | Expiry date | : |
| Number of samples | : 1 group | Institute sample register no: | 17/794/1 |
| Sample handling | : By post | Reception date and time | : 27/11/2017 15:40 |
| Condition of sample at reception: | Appropriate | Date of the analysis | : 28/11/2017- 05/12/2017 |
| Information on retention samples: () Sample returned to the customer () Retention sample available (X) Retention sample is not taken | | | |
| <p>1 group of Composite Material sample which has a registration number 6005 MAM had been delivered by post from ECE BOYA KİMYA SANAYİ ve TİC.A.Ş. on November 27th, 2017. The test had been applied according to the sample sizes and conditions determined in UL 94 V-0 Vertical Burning Test Standard.</p> <p>Flammability Test: One group (2 sets) sample have been prepared by company and their length and width are 125 ± 5 mm and 13.0 ± 0.5 mm relatively. First set (5 samples) has been tested according to UL 94 V-0 Vertical Burning Test Standard. The specimen has been placed with vertical into the test chamber (Figure2). According to the UL94 V-0 test standard the flame has been applied at an angle of approximately 90° to the horizontal. The height of the flame of methane gas has been arranged to be 20 mm (Figure 3).</p> | | | |
|  | | | |
| Figure 1. Flammability test cabin | | | |
| <p>Samples have been conditioned for 48 hours at 23 °C and 50 % RH (Relative Humidity) as specified in the Standard. After conditioning five specimens of each thickness have been tested for 7 days at 70 °C 4 hours have been immersed in Desiccator. The prepared samples before the test are shown in Figure 3.</p> | | | |
| Notes: (Açıklamalar, örneğin planlanan fakat yapılamayan test/analizler, numunenin mevzuat/standartlara uygunluğu, analiz süresinde yaşanan aksaklıklar veya gecikmeler vb. konular burada yer alır. Bu kısım kullanılmadığı takdirde boş bırakılır.) | | | |
| Authorized Signatures:  | | | |
| Institute Personal Registration Number: 53295 | | | |
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1. TAKIM

2. TAKIM

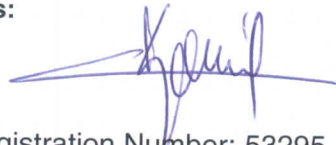
Figure 2. Samples before test



Figure 3. Test setup

Notes: (Açıklamalar, örneğin planlanan fakat yapılamayan test/analizler, numunenin mevzuat/standartlara uygunluğu, analiz süresinde yaşanan aksaklıklar veya gecikmeler vb. konular burada yer alır. Bu kısım kullanılmadığı takdirde boş bırakılır.)

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Results: Test samples are shown in Figure 4 after test.

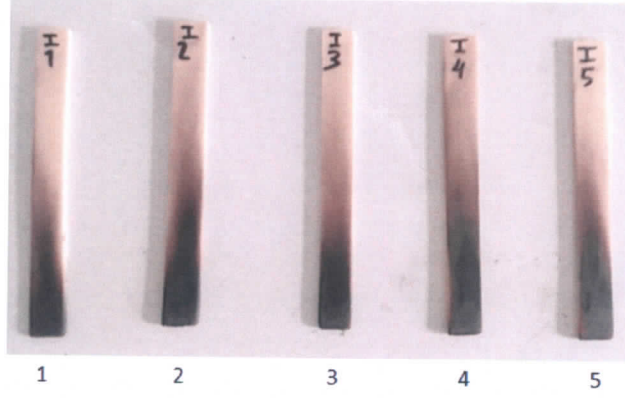


Figure 4. Tested pieces of sample (after test)

Test Procedure:

- The specimen has been clamped from the upper 6 mm (Figure 2).
- The lower end of specimen is 300 ± 10 mm above the horizontal layer.
- Absorbent 100 percent cotton thinned to approximately 50x50 mm and a maximum thickness of 6 mm and also not more than 0.08 g has been placed.

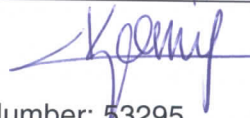
A blue 20 mm high flame has been applied to the center of the lower edge of the specimen for 10 seconds and removed.

Table 1. Flammability test results for the sample

| Specimen code | t ₁ (s) | t ₂ (s) | t ₃ (s) | Afterflame or glow of any specimen up to the holding clamp | Cotton indicator ignited by flaming particles or drops |
|---------------|--------------------|--------------------|--------------------|--|--|
| First Set | 1 | 0 | 0 | - | No |
| | 2 | 0 | 0 | - | No |
| | 3 | 0 | 0 | - | No |
| | 4 | 0 | 0 | - | No |
| | 5 | 0 | 0 | - | No |

Notes: (Açıklamalar, örneğin planlanan fakat yapılamayan test/analizler, numunenin mevzuat/standartlara uygunluğu, analiz süresinde yaşanan aksaklıklar veya gecikmeler vb. konular burada yer alır. Bu kısım kullanılmadığı takdirde boş bırakılır.)

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The following are to be observed and recorded for each specimen:

- Afterflame time first flame application, t_1 .
- Afterflame time second flame application, t_2 .
- Afterglow time after second flame application, t_3 .

If only one specimen from a set of five specimens does not comply with the requirements (Table 2), another set of five specimens is to be tested. In the case of the total number of seconds of flaming, an additional set of five specimens is to be tested if the totals are in the range of 51-55 seconds for V-0 and 251-255 seconds for V-1 and V-2. All specimens from this second set shall comply with the appropriate requirements in order for the material in that thickness classified V-0, V-1, V-2.

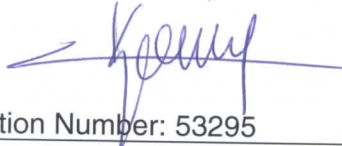
Table 2. Materials classifications

| Criteria conditions | V-0 | V-1 | V-2 |
|--|-------------|--------------|--------------|
| Afterflame time for each individual specimen t_1 or t_2 | ≤ 10 s | ≤ 30 s | ≤ 30 s |
| Total afterflame time for any condition set (t_1 plus t_2 , for the 5 specimens) | ≤ 50 s | ≤ 250 s | ≤ 250 s |
| Afterflame plus afterglow time for each individual specimen after the second flame application ($t_2 + t_3$) | ≤ 30 s | ≤ 60 s | ≤ 60 s |
| Afterflame or afterglow of any specimen up to the holding clamp | No | No | No |
| Cotto indicator ignited by flaming particles or drops | No | No | Yes |

E-7 FR POLYESTER REÇİNE samples for providing the necessary conditions which shown in Table 2, have been included in the class of **V-0 flame retardant** according to the UL94 V-0 Vertical Burning Test Standard.

Notes: (Açıklamalar, örneğin planlanan fakat yapılamayan test/analizler, numunenin mevzuat/standartlara uygunluğu, analiz süresinde yaşanan aksaklıklar veya gecikmeler vb. konular burada yer alır. Bu kısım kullanılmadığı takdirde boş bırakılır.)

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