INSTITUT TEKNOLOGI SEPULUH NOPEMBER
FAKULTAS TEKNOLOGI INDUSTRI DAN REKAYASA SISTEM
DEPARTEMEN TEKNIK FISIKA
LABORATORIUM MATERIAL FUNGSIONAL MAJU
Ruang E103 – Gedung P, Kampus ITS Keputih Sukolilo, 60111, Surabaya

HASIL PENGUJIAN DAYA SERAP AIR ISOLATOR TUBE TEMBAGA
Nomor: 04/05/E/LMFM/2022

I. Dasar Pengujian

Permohonan pengujian daya serap air sampel isolator tube tembaga per tanggal 30 Maret 2022 [redacted]

II. Sediaan (Sampel) Pengujian

Sampel material diterima adalah tubing tembaga terisolasi bermerek Zutto Black untuk aplikasi AC.

III. Pelaksanaan Pengujian

Pengujian daya serap air dilakukan di Laboratorium Material Fungsional Maju, Departemen Teknik Fisika.

IV. Parameter Pengujian

Parameter pengujian meliputi daya serap air material isolator tube tembaga.

V. Metodologi Pengujian

Pengujian daya serap air material isolator tube tembaga dilakukan berdasarkan prosedur standar ASTM D570 – 98 *Standard Test Method for Water Absorption of Plastics*.

VI. Evaluasi Hasil Pengujian

Daya serap air diuji dalam kondisi perendaman 3 dan 24 jam sesuai ASTM D570 – 98. Daya serap air untuk eksposur 3 jam adalah 39.22 ± 6.21%, dan daya serap air untuk eksposur 24 jam adalah 69.25 ± 2.21%.

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Surabaya, 25 Mei 2022

Menyetujui,

Kepala Laboratorium Material Fungsional Maju

Dr.-Ing Doty Dewi Risanti, S.T., M.T.

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LAMPIRAN PENGUJIAN
Nomor: 04.A/05/E/LMFM/2022

Berikut ini adalah worksheet pengujian serap air untuk isolator tube tembaga berdasarkan ASTM D570 – 98.

WATER ABSORPTION OF PLASTIC
TEST RESULT

1. Dimension of the Specimens

Specimen No.	Internal Diameter (cm)	Outer Diameter (cm)	Length (cm)
1	1.1	3.55	2.6
2	1.2	3.3	2.55
3	1.15	3.35	2.7
4	1.2	3.45	2.65
5	1.15	3.25	2.55
6	1.1	3.25	2.45

2. Conditioning

The specimens were dried in an oven for 1 hour at 107°C.

3. Immersion Procedure

- 24 Hour Immersion were carried out for the specimen number 4, 5, and 6.
- Two-Hour Immersion were carried out for the specimen number 1, 2, and 3.

4. Time of immersion

Time of immersion is unnecessary since the immersion was carried out by 24-Hour and Two-Hour immersion only

5. Percentage increase in weight during immersion

Specimen No.	Conditioned Weight (gr)	Wet Weight (gr)	Percentage of weight increase
1	0.9722	1.3207	35.85%
2	1.0163	1.3606	33.88%
3	0.9942	1.4706	47.92%
4	0.9702	1.628	67.80%
5	0.9987	1.7215	72.37%
6	0.946	1.5854	67.59%

6. Percentage of soluble matter lost during immersion

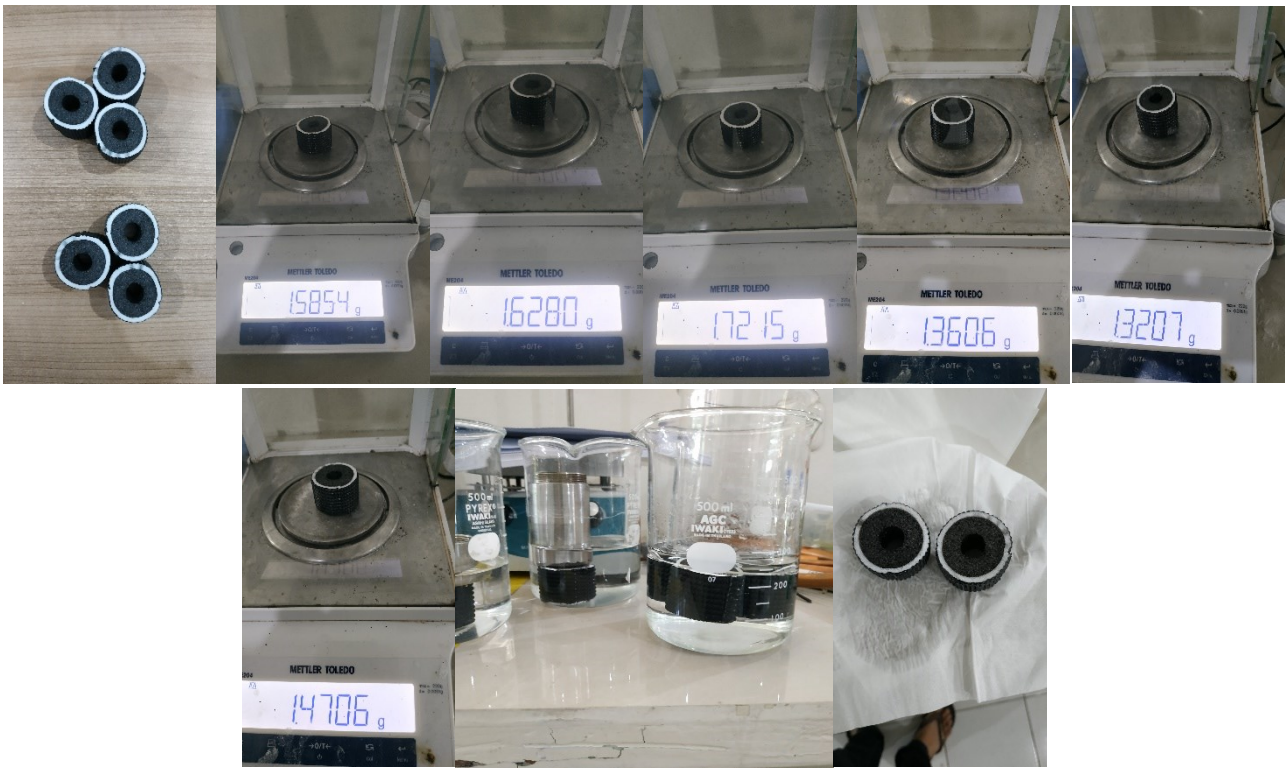
Specimens are not suspected to contain any appreciable amount of water-soluble ingredients. Therefore, reconditioning is deemed unnecessary

7. **Graph of the increase in weight**
   Long-term immersion was not conducted.

8. **The percentage of water absorbed**
   The percentage of water absorbed is the sum of percentage increase in weight during the immersion and the percentage of soluble matter lost during the immersion. Since it was assumed that no soluble matter lost during the immersion, therefore the percentage of water absorbed is equal to the percentage of increase in weight

9. **Any observations as to warping, cracking, or change in appearance of the specimens**
   No apparent warping, cracking, or change in appearance is evident in all test specimens

Procedure	Avg. of Internal Diameter (cm)	Avg. of Outer Diameter (cm)	Avg. of Length (cm)	Avg. of Conditioned Weight (gr)	Avg. of Wet Weight (gr)	Average of Percentage Increase in weight
Two-Hours Immersion	1.15	3.4	2.616667	0.994233	1.383967	39.214 %
24-Hours Immersion	1.15	3.316667	2.55	0.971633	1.644967	69.254 %



Gambar L7. Dokumentasi uji resapan air pada sampel isolator tube tembaga.