

Stability Analysis of Sugi Absorbent Material in various chemicals (SOA 917)

Implementation:

Each die-cutted circle of art.no. 50814 (Sugi 2000 Bleaching and Washing) is placed in 50 ml of the appropriate chemical.

Before that the circle has to be weighed. After one hour in the test solution the circle is weighed again to investigate the relative absorptive capacity.

Furthermore it is observed how the circle acts in the test solution. Does it swell, swim, solidify or decompose.

The test will be conducted for a period of 6 weeks.

Result:

	Chemical	Circle tr. (g)	Circle ges. (g)	Relative Absorptive Capacity (%)	swims in the chemical	swells	solidify respectively loses flexibility	decomposes	deformation after 1 week	deformation after 6 weeks
1	acetic acid 1%	0,66	10,12	1433	yes	yes	no	no	none	none
2	acetone 10%	0,67	9,69	1346	yes	yes	no	no	none	none
3	chloroform	0,67	5,03	651	yes	no	yes	no	none	none
4	citric acid 5%	n.b.	n.b.	n.b.	n.a.	n.a.	n.a.	n.a.	none	n.a.
5	ethanol	0,66	2,96	348	yes	no	yes	no	none	none
6	ethyl acetate	0,67	3,3	393	yes	no	yes	no	none	none
7	hydrochloric acid 2%	0,67	10,29	1436	yes	yes	no	no	none	decomposes
8	hydrogen peroxide 3%	0,67	10,17	1418	yes	yes	no	no	none	none
9	isopropyl alcohol	0,69	2,98	332	yes	no	yes	no	none	none
10	methanol 10%	0,66	9,58	1352	yes	yes	no	no	none	none
11	phosphoric acid 5%	0,69	10,73	1455	yes	yes	no	no	none	none
12	petroleum ether	0,7	2,49	256	yes	no	yes	no	none	none
13	sodium hydroxide 5%	0,7	11,08	1483	yes	yes	no	no	none	none
14	sodium hydroxide 40%	0,69	16,49	2290	yes	yes big	no	no	none	none
15	sulfuric acid 2%	0,67	10,07	1403	yes	yes	no	no	none	none
16	tetrahydrofuran	0,67	3,22	381	yes	no	yes	no	none	none
17	toluene	0,67	3,22	381	yes	no	yes	no	none	none
18	tween-20	0,67	10,03	1397	yes	yes	no	no	none	none
19	xylene	0,68	3,33	390	yes	no	yes	no	none	none
20	EDTA 10%	0,68	9,68	1324	yes	yes	no	no	none	none

Evaluation:

Sugi Absorbent Material is resistant to all chemicals which were used in the test. The absorptive capacity in aqueous solution is similar to the absorptive capacity in water. In organic solvents e.g. chloroform, toluene etc. the absorptive capacity is highly reduced and the material will solidify.

It does not swell or swells only a little. However in dilute aqueous solution e.g. 10% methanol solution the absorptive capacity is good.

In dilute hydrochloric acid solution the material decomposes gradually.

Analysis of tensile strength

Implementation

Two 19mm test strips of art. No. 11814 lot 90/09 are placed at a time into the appropriate chemical. The tensile strength of one test strip will be determined after 7 hours. The tensile strength of the other test strip will be determined after 7 days by Zwick-tensile strength measuring instrument (PV-QKL Xomed-Zug wet).

Result

	Chemicals	tensile strength after 7 hours	expansion after 7 hours	tensile strength after 7 days	expansion after 7 days
1	acetic acid 1%	41,15	24,55	55,92	36,61
2	acetone 10%	57,31	43,99	64,94	42,43
3	chloroform	109,18	6,45	102,16	9,88
4	citric acid 5%	n.a.	n.a.	n.a.	n.a.
5	ethanol	101,89	5,44	81,35	6,34
6	ethyl acetate	115,98	5,44	102,8	5,84
7	hydrochloric acid 2%	25,3	34,76	10,3	25,77
8	hydrogen peroxide 3%	48,31	29,73	42,41	36,31
9	isopropyl alcohol	89,38	3,86	106,87	4,56
10	methanol 10%	41,61	34,55	53,02	27,12
11	phosphoric acid 5%	42,18	36,76	36,27	33,33
12	petroleum ether	94,88	4,66	99,86	3,68
13	sodium hydroxide 5%	42,81	40,54	49,13	42,3
14	sodium hydroxide 40%	32,88	52,33	44,88	72,54
15	sulfuric acid 2%	46,89	40,18	43,68	54,88
16	tetrahydrofuran	94,56	5,88	102,24	3,76
17	toluene	114,25	5,88	109,17	5,52
18	tween-20	46,65	41,23	41,93	35,33
19	xylene	89,69	5,52	97,91	6,88
20	EDTA 10%	56,09	58,09	61,02	46,01
	RO-Water	38,88	39,54	62,85	42,3

Evaluation:

The test shows that the tensile strength in aqueous solution is similar to RO-water.

Organic solvents will increase the tensile strength because the material solidifies and loses flexibility.

Hydrochloric acid reduces the tensile strength. The material loses its consistency.