Absorption test of AireX

Abeo has performed absorption test of two types of AireX, examining two different surfaces of each type of AireX.

The tests were performed according to EN772-11:2011 in November 2023 through January 2024 at Abeo's location in Jyderup, Denmark.

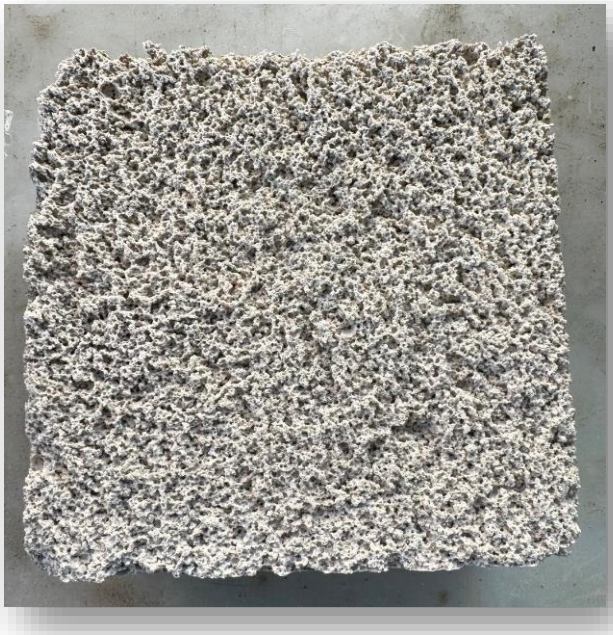
Testing samples

Four cubes 150 x 150 x 150 mm of AireX275 were cast on October 16th, 2023 and another four cubes of AireX600 were cast on October 19th, 2023.

After demolding the cubes the following day, all cubes were wrapped in folio to prevent moisture evaporation during the entire curing time.

When cured, all cubes were cut in two samples of 150 x 150 x 70-75 mm and dried to constant mass in oven at 90 ^{0}C.

For each AireX type, four cubes makes up 4 test samples representing a "cut" surface and 4 test samples of a "mould" surface cast in a steel mould. The "cut" surface has an open porous structure, whereas the "mould" surface gives a smooth and less porous structure.



"Cut" surface of AireX275

"Mould" surface of AireX275/600

Test procedure

After a short cooling period, the dry weight of all samples was determined on a scale with an accuracy of 1 gram.

Dry weight of sample

Test samples were immersed in a plastic tray containing 25 mm water. The samples were supported on plastic devices to keep the samples immersed in 5 mm of water. The dimension of the immersed surface was 150 x 150 mm.

After 10 minutes immersed in water, the samples were removed from the tray, the water was wiped of the surface and the weight was determined, whereafter the samples were immersed in the tray again. This procedure was repeated after 30 minutes and 90 minutes.

Samples immersed in water.

Test results

According to EN772-11, chap. 8.2, the coefficient of water absorption is calculated using the following formula:

$C_{w,s} = (m_{s0,s} - m_{dry,s})/(A_s * \sqrt{t_{s0}}) * 10^6$ [g/(m^2 * s^{0,5}]

$C_{w,s}$ – coefficient of water absorption due to capillary action

$m_{s0,s}$ – mass of sample in grams after soaking time

$m_{dry,s}$ – dry mass of sample in grams

A_s – gross area of surface immersed in water

t_{s0} – soaking time in seconds

Absorption test

AireX275 cast date: October 16th, 2023

AireX600 cast date: October 19th, 2023

Sample	Date of test	Type	Mould surface/cut surface	Area mm^2	Weight dry g	Weight wet 10 min g	Weight wet 30 min g	Weight wet 90 min g	Absorption ($C_{w,s}$) 10 min $g/(m^2*s^{0.5})$	Absorption ($C_{w,s}$) 30 min $g/(m^2*s^{0.5})$	Absorption ($C_{w,s}$) 90 min $g/(m^2*s^{0.5})$
1	27.11.2023	AireX275	Mould	22500	368	534	541	562	301,2	181,2	117,3
2	27.11.2023	AireX275	Mould	22500	370	515	567	617	263,1	206,4	149,4
3	27.11.2023	AireX275	Mould	22500	369	534	543	565	299,4	182,3	118,5
4	27.11.2023	AireX275	Mould	22500	358	478	514	539	217,7	163,4	109,5
5	27.11.2023	AireX275	Cut	22500	363	531	574	587	304,8	221,0	135,5
6	27.11.2023	AireX275	Cut	22500	353	501	529	538	268,5	184,4	111,9
7	27.11.2023	AireX275	Cut	22500	394	621	582	625	411,9	196,9	139,7
8	27.11.2023	AireX275	Cut	22500	400	572	606	684	312,1	215,8	171,8
9	27.11.2023	AireX600	Mould	22500	961	967	971	981	10,9	10,5	12,1
10	27.11.2023	AireX600	Mould	22500	922	934	942	948	21,8	21,0	15,7
11	27.11.2023	AireX600	Mould	22500	902	909	913	926	12,7	11,5	14,5
12	27.11.2023	AireX600	Mould	22500	971	979	982	989	14,5	11,5	10,9
13	29.01.2024	AireX600	Cut	22500	1007	1029	1033	1039	39,9	27,2	19,4
14	29.01.2024	AireX600	Cut	22500	974	998	1001	1006	43,5	28,3	19,4
15	29.01.2024	AireX600	Cut	22500	1048	1072	1074	1079	43,5	27,2	18,7
16	29.01.2024	AireX600	Cut	22500	1014	1040	1044	1048	47,2	31,4	20,6

Test results

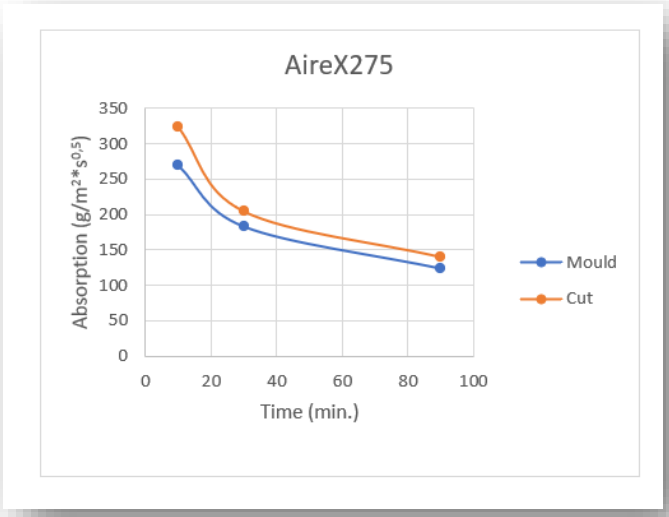
The mean coefficient of water absorption was calculated.

AireX275 absorption ($g/(m^2*s^{0.5})$)

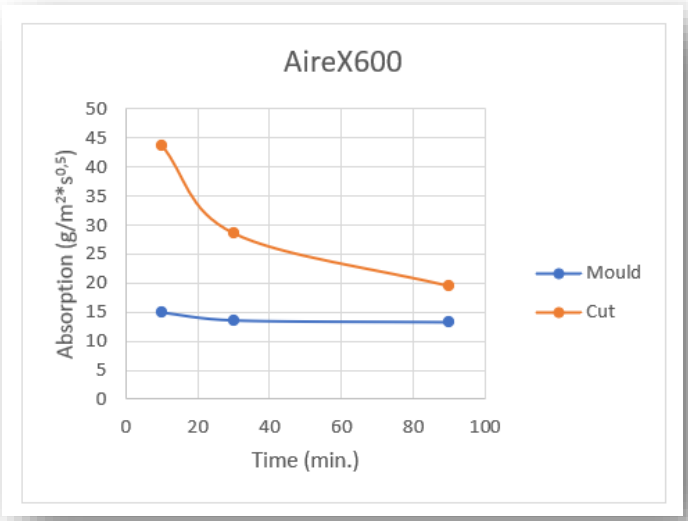
	Time (minutes)		
	10	30	90
Mould	270	183	124
Cut	324	205	140

AireX600 absorption ($g/(m^2*s^{0.5})$)

	Time (minutes)		
	10	30	90
Mould	15	14	13
Cut	44	29	20



Absorption coefficient of AireX275



Absorption coefficient of AireX600