



TEST REPORT

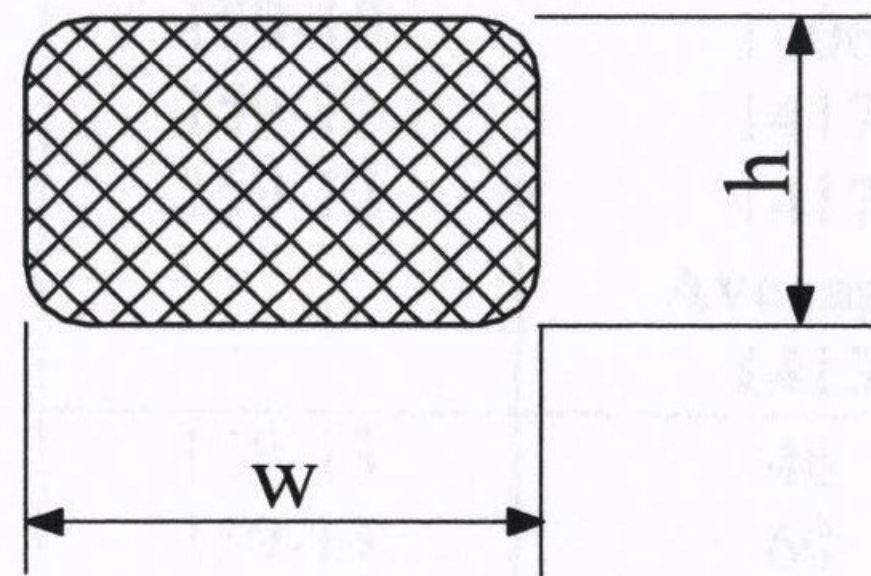
№ CM 239-17 / 05.05.2017.

1. Name of the product: (name of the product – type, trade mark etc.)	Water swelling butyl bentonite based waterstop „EshaHydrobent”
2. Contractor of the tests: (name and address of the contractor,)	Alfa Alfa Energy SA - ESHA 19300 Aspropyrgos, Athens - Greece Test request № 159-17/25.04.2017.
3. Test methods: (title and number of the standards)	BDS ISO 23529:2012 Rubber - General procedures for preparing and conditioning test pieces for physical test methods; BDS ISO 2781:2010 Rubber, vulcanized or thermoplastic - Determination of density; BDS ISO 37:2011 Rubber, vulcanized or thermoplastic -- Determination of tensile stress-strain properties; ASTM D545 – 14 Standard Test Methods for Preformed Expansion Joint Fillers for Concrete Construction (Nonextruding and Resilient Types); BDS EN 12814-1:2003 Testing of welded joints of thermoplastics semi-finished products - Part 1: Bend test.
4. Sampling method:	The test sample is delivered in the laboratory by the Contractor of the tests
5. Date of receipt of the sample:	25.04.2017.
6. Quantity of the tested samples: (quantity of samples, dimensions, mass, lab №)	One sample of Water swelling butyl bentonite based waterstop „EshaHydrobent” 5m long. The sample is split into sub-samples with lab. № 159-1 to 159-27
7. Date of testing:	25.04.2017г. – 26.04.2017г.

Head of the laboratory:
(assoc. prof. eng. I. Rostovsky, PhD)



8. Test results



№	Characteristic	Meas. unit	Test method	Lab. №	Test results (value, uncertainty)	Requirements, tolerances	Test conditions	Any deviations from the test method/Notes:
1	2	3	4	5	6	7	8	9
1	Height	mm	BDS ISO 23529:2012	159-1	20.2	MDV	t = 21°C φ = 59 %	-
				159-2	19.7			
				159-3	19.8			
				159-4	20.0			
				159-5	19.7			
				156-6	20.0			
				159-7	20.3			
				159-8	20.1			
				159-9	20.0			
				Average: 19.98 ≈ 20				
2	Width	mm	BDS ISO 23529:2012	159-1	25.4	MDV	t = 21°C φ = 59 %	-
				159-2	24.7			
				159-3	25.0			
				159-4	25.1			
				159-5	25.2			
				156-6	25.3			
				159-7	24.8			
				159-8	24.7			
				159-9	25.1			
				Average: 25.03				

1	2	3	4	5	6	7	8	9
3	Density	kg/m ³	BDS ISO 2781:2010	159-10 159-11 159-12	1406 1417 1417 Average: 1413	NP	t = 21°C φ = 59 %	-
4	Elongation at break	%	BDS ISO 37:2011	159-13 159-14 159-15 159-16 159-17 159-18	46 60 40 47 53 51 Average: 49.5	MDV		-
5	Swelling (in potable water after 72h)	%	ASTM D545 – 14	159-19 159-20 159-21	456 468 484 Average: 469	MDV		-
6	Water absorption (after 72 h)	%	ASTM D545 – 14	159-22 159-23 159-24	224 249 248 Average: 240	MDV	t = 21°C φ = 59 %	-
7	Bending (at 0°C)	-	BDS EN 12814-1:2003	159-25 159-26 159-27	Without any cracks	-		-

Note 1: Test results are referred only to the tested samples. Extracts from the Test Protocol cannot be multiplied without the written agreement of the laboratory.

Note 2: If it is necessary, opinions and interpretations concerning some tests can be included in the test report (conclusions are not allowed) in conformance with the requirements of p. 5.10.5 from BDS EN ISO/IEC 17025.

Note 3: This test report is issued in two identical copies – “Contractor” and “Laboratory”. No adjustments to the document are permitted without the written agreement of the laboratory.

Test performer:
(G. Stoyanov)

Head of the laboratory:
(assoc. prof. eng. I. Rostovsky, PhD)

