TECHNICKÝ A SKÚŠOBNÝ ÚSTAV STAVEBNÝ, n. o.
BUILDING TESTING AND RESEARCH INSTITUTE, Slovak Republic
Studená 3, 821 04 Bratislava
Testing laboratory

SNAS
Reg. No. 004/S-045

Laboratory branch in Studená 3, 821 04 Bratislava, tel.: +421 2 49228 252, e-mail: lab.ba@tsus.sk

TEST REPORT No. 20-20-0778

JOB

No.:	20190383
Client:	LLC Clight Group 98 V. Sukhomlinsky str., 52005 Dnipropetrovsk region, Dniprovskiy district, Slobozhanske village, Ukraine

OBJECT OF TESTING

Product:	polymer microfibres
Manufacturer:	LLC Clight Group 98 V. Sukhomlinsky str., 52005 Dnipropetrovsk region, Dniprovskiy district, Slobozhanske village, Ukraine
Manufacturing plant:	at manufacturer address
Standard of product:	EN 14889-2:2006 Fibres for concrete - Part 2: Polymer fibres - Definitions, specifications and conformity.

PRODUCT SAMPLE

Description of sample:	Polymer fibres for concrete Density of 0,9 g/cm^3, length of 12 mm
Designation by client:	mono-filamented polymer micro fibres, trade name: FiberMix, Class: Ia
Date of production:	unknown
Place and date of sampling:	in manufacturing plant, date unknown
Sampling executed by:	client
Place and date of delivery:	Test laboratory TSÚS Bratislava branch, 24.02.2020
Designation of sample by lab:	96/20

TESTS

Determination of consistency of fresh concrete by time VeBe - accredited test

Test procedure:	STN EN 12350-3: 2020 Testing of fresh concrete. Part 3: VeBe test
Description of test specimens:	fresh concrete with polymer fibres and fresh concrete without polymer fibres
Test specimens prepared by:	Test laboratory TSÚS, Bratislava branch
Place of test execution:	Test laboratory TSÚS, Bratislava branch
Concrete mixture:	aggregate fr. 0/4 mm 952,0 kg/m^3 aggregate fr. 8/16 mm 952,0 kg/m^3 cement CEM I 42,5R 320,0 kg/m^3 water 176,0 l/m^3 fibres FiberMix 4,0 kg/m^3 and 0 kg/m^3
Test conditions:	temperature of (20 ± 2)°C, relative humidity of (50 ± 5)%
Place of test execution:	Test laboratory TSÚS, Bratislava branch
Deviation of testing process:	none
Date of test:	26.03.2020
Testing executed by:	Peter Kiršner

TEST RESULTS:

Table 1 - Determination of consistency of fresh concrete by time VeBe

Sample No.:	Fresh concrete	Type of concrete slump	Height of slump (mm)	Time VeBe (s)
1	Without fibres	Correct	70	5,4
2	Without fibres	Correct	70	5,4
3	Without fibres	Correct	80	5,9
1	with polymer fibres	Correct	60	6,7
2	with polymer fibres	Correct	70	6,9
3	with polymer fibres	Correct	70	7,1

Technický a skúšobný ústav stavebný, n. o., Bratislava, skúšobné laboratórium, pracovisko Bratislava

Date of report: 15.05.2020

Prepared by: Peter Kiršner

Authorized by: .....
Ing. Daniel Pethő
Head of Laboratory Branch

Notes:

- Unless the Test Laboratory makes the sampling, data on the manufacturer, its manufacturing plant and about the sampling are presented according to information provided by the client. If any data provided by the customer may affect the validity of the results, the testing laboratory shall reject the responsibility for the validity of these results.
- The tests were executed in accordance with the stated test methods
- Presented results are relevant to the product sample only.
- This report shall not be reproduced except in full without written approval of the Test Laboratory.

---------- **End of test report** ----------

Výskumný ústav chemických vlákien, a.s.
Štúrova 2, 059 21 Svit
Testing Laboratories of Physical, Analytical and Textile (SL-FAT)

Telephone: 00421 52 7842164 **e-mail:** dslfat@vuchv.sk **Fax:** 00421 52 7755663

SNAS Reg. No. 012/S-020

A – accredited test
N – non-accredited test

TEST REPORT

No.: 147 / 2020

Determination of mechanical properties of fibre

Name of sample:	**Polypropylene microfiber FiberMix** **colour: white**
Designation:	**without designation**
Order Party:	LLC Clight Group 98 V. Sukhomlinsky str. 52005 Dnipropetrovsk region, Dniprovskiy district Slobozhanske village Ukraine
Sample Acceptance Date:	29.05.2020

Location of performance of tests: Štúrova 2, 059 21 Svit

Amendments to test report Issue Date: 03.06.2020

Test findings relate only to the object of tests and they do not substitute for other documents.

Reproduction of Test Report is allowed only based on written consent of testing laboratories as a complete document.

SKÚŠOBNÉ LABORATÓRIÁ FYZIKÁLNE, ANALYTICKÉ A TEXTILNÉ
Výskumný ústav chemických vlákien, a.s.
VÚCHV
SVIT

Approved by:

RNDr. Jana Ileninová
Head of SL-FAT

Data about sample:
Sampling was performed by the Order Party. Sample was supplied to the Testing Laboratory by Post.

Internal identification of sample:

V 243/20	**Polypropylene microfiber FiberMix**
Colours tested:	white
Number of supplied samples:	1 pc of fiber

Informative data about used methods:

STN EN ISO 139:2005 **STN EN ISO 139:2001/A1**	Textiles. Standard atmospheres for conditioning and testing.
STN EN ISO 2062:2010	Textiles. Yarns from packages. Determination of single-end breaking force and elongation at break using constant rate of extension (CRE) tester.
Conditions of measurement:	*Strength range: 5 kN* *Move of clamps: 500 mm / min* *Gauge length: 500 mm* *Preload: 0,5 cN/dtex* *Testing atmosphere: temperature. (20-21) °C, RH: (63-67) %*
STN EN ISO 2060:1998	Textiles. Yarn from packages. Determination of linear density (mass per unit length) by the skein method.

Informative data about used equipment:
Analytical scales SARTORIUS 1712
Constant-rate-of extension testing machine INSTRON 3345
Gauge of length – KINEX + gauge metal with a length of 1 meter
Metric winders FY 30

The devices are approved/calibrated in terms of valid regulations for measuring accuracy technique.

Deviations, exemptions in testing procedures:
Unnecessary.

Special testing method application:
Unnecessary.

SKÚŠOBNÉ LABORATÓRIÁ FYZIKÁLNE, ANALYTICKÉ A TEXTILNÉ
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TEST RESULTS

Table 1 Mechanical properties and diameters of the sample **V 243/20**

S.N.	Length weight [dtex]	Tensile force [cN]	Tensile strength [cN/dtex]	Elongation [%]	Elastic modulus [cN/dtex]	Standard	
1	1009,0	6287,6	6,2	19,5	60,0	STN EN ISO 2062	A
2	1009,0	6437,9	6,4	21,3	60,7		
3	1009,0	6597,1	6,5	21,4	60,7	STN EN ISO 2060	A
4	1009,0	6319,7	6,3	21,2	57,1		
5	1009,0	6389,3	6,3	21,2	59,3		
6	1009,0	6583,1	6,5	21,7	59,6		
7	1009,0	6640,0	6,6	22,4	59,3		
8	1009,0	6561,3	6,5	20,1	61,5		
9	1009,0	6361,5	6,3	22,5	56,2		
10	1009,0	6105,3	6,1	20,7	57,7		
11	1009,0	6397,7	6,3	19,9	59,9		
12	1009,0	6464,6	6,4	20,4	61,3		
13	1009,0	6512,7	6,5	21,1	61,5		
14	1009,0	6233,0	6,2	21,5	57,4		
15	1009,0	6562,9	6,5	21,9	58,2		
16	1009,0	6426,4	6,4	20,8	59,0		
17	1009,0	6448,7	6,4	21,9	58,9		
18	1009,0	6400,6	6,3	21,7	58,6		
19	1009,0	6481,8	6,4	22,0	59,6		
20	1009,0	6519,8	6,5	19,6	60,3		
21	1009,0	6328,4	6,3	19,7	59,4		
22	1009,0	5914,0	5,9	17,0	59,4		
23	1009,0	6544,2	6,5	22,1	57,4		
24	1009,0	6490,8	6,4	20,1	60,6		
25	1009,0	6270,8	6,2	19,3	59,1		
26	1009,0	5899,6	5,8	17,7	60,6		
27	1009,0	6171,2	6,1	19,1	60,1		
28	1009,0	6483,9	6,4	19,9	61,9		
29	1009,0	6310,5	6,3	18,4	60,9		
30	1009,0	6395,1	6,3	21,4	58,7		
Minimum value	-	**5899,6**	**5,8**	**17,0**	**57,1**		
Maximum value	-	**6640,0**	**6,6**	**22,5**	**61,9**		
Average	**1009,0**	**6384,6**	**6,3**	**20,6**	**59,5**		
Coefficient of variation [%]	-	2,8	2,8	6,8	2,4		

Works done by: M. Dzivjaková

Date: 29.05.2020 – 03.06.2020

Report prepared by: RNDr. Jana Ileninová

Checked by: Ing. Elena Budzáková

The End of Test Report No.: 147/2020