

Family Name	: <b>NILOFLEX</b>
Product Name	: <b>NILOFLEX 15 PY</b>
Product Full Name	: <b>NILOFLEX 15 PY 450 Sand 4.5mm S/E</b>
Type of Product	: <b>an Elastomeric SBS</b>
Type of Reinforcement	: <b>POLYESTER</b>

Sampling methodology <b>According to EN 13416:2001</b>
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Batch No. <b>264 1 11</b>
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Compound	: <b>SBS -15</b>
Reinforcement	: <b>POLYESTER as P.S JM 032-180</b>
Upper Surface	: <b>SAND</b>
Lower Surface	: <b>POLYETHYLENE</b>
Production date	: <b>22/09/2021</b>

System Applied : **Under layer (Bottom layer) or intermediate layer in multilayer system.**

M	TEST	STANDARD	UNIT	TOLLERANCE	SPECIFIED VALUES	ACTUAL MEASURING VALUE	REF. REPORT NO.	Date of Measure	REMARKS
*	Visual Defects	EN 1850-1	-	Pass	Passed	<b>Pass</b>	4393/1850-1	23/09/2021	
*	Thickness	EN 1849-1	mm	-5%	4.5	<b>4.52</b>	4393/1849-1	23/09/2021	
*	Weight	EN 1849-1	kg/m2	-10%	-	-	-	-	
*	Length	EN 1848-1	m	-1%	10	<b>10.02</b>	4393/1848-1	23/09/2021	
*	Width	EN 1848-1	m	-1%	1	<b>1.001</b>	4393/1848-1	23/09/2021	
*	Straightness	EN 1848-1	-	20mm/10m	± 10	<b>2</b>	4393/1848-1	23/09/2021	
*	Flexibility at low temperature	EN 1109	°c/ø mm *	≤	-15	U.S. : <b>-15</b> L.S. : <b>-15</b>	4393/1109	23/09/2021	
*	Flow resistance at elevated Temp.	EN 1110	°c	≥	100	<b>100</b>	4393/1110	23/09/2021	
*	Water Impermeability (Water tightness)	EN 1928 method A	60 KPa	Passed	Passed	<b>60</b>	4393/1928	26/09/2021	
-	Vapour Permeability	EN 1931	μ	-	20000	<b>20,000</b>	use the min. value as per Norm.		
*	Tensile Strength Longitudinal	EN 12311-1	N/50mm	-20%	950	<b>949</b>	Machine report	23/09/2021	
*	Tensile Strength Transversal	EN 12311-1	N/50mm	-20%	700	<b>686</b>	Machine report	23/09/2021	
*	Elongation @ Break Longitudinal	EN 12311-1	%	-15 absolute (polyester only)	45	<b>34</b>	Machine report	23/09/2021	
*	Elongation @ Break Transversal	EN 12311-1	%	-15 absolute (polyester only)	50	<b>40</b>	Machine report	23/09/2021	
-	Tear resistance (nail shank) :Longitudinal	EN 12310-1	N	-30%	225	<b>247</b>	Machine report	23/09/2021	
-	Tear resistance (nail shank) :Transversal	EN 12310-1	N	-30%	225	<b>284</b>	Machine report	23/09/2021	
-	Dimensional stability	EN 1107-1	%	≤	± 0.5	<b>-0.43</b>	4393/1107-1	27/09/2021	
-	Resistance to Static loading	EN12730 method A	kg	Min.	25	<b>25</b>	4393/12730	25/09/2021	
-	Resistance to Impact	EN12691 method B	mm	Min.	900	<b>900</b>	4393/12691	26/09/2021	
-	Peel resistance of joints	EN 12316-1	N/50mm	-20N	-	<b>134</b>	Machine report	25/09/2021	
-	Shear resistance of joints :Longitudinal	EN 12317-1	N/50mm	-20%	950	<b>957</b>	Machine report	25/09/2021	
-	Shear resistance of joints:Transversal	EN 12317-1	N/50mm	-20%	700	<b>634</b>	Machine report	25/09/2021	
-	Durability (Flexibility after artificial ageing)	EN 1296/ EN1109	°c/ø mm *	≤	-5	U.S. : - L.S. : -	-	-	
-	Durability (Heat Flow after artificial ageing)	EN 1296/EN1110	°C	≥	90	-	-	-	
-	Durability (Visible defects after U.V ageing)	UNI EN 1297/EN1850-1	-	-	Passed	-	-	-	
-	External Fire Performance	ENV 1187/EN 13501-5	Class	-	F roof	<b>F roof</b>	No Performance Determined		
*	Reaction of Fire	EN 11925-2/EN 13501-1	Class	-	E	<b>E</b>	-	-	
-	Watertightness after stretching at low temperature	EN13897	%	-	-	-	-	-	
-	Adhesion of Granules	EN12039	%	Max.	-	-	-	-	
-	Root Resistance	EN 13948	-	NPD	NPD	<b>NPD</b>	-	-	
-	Dangerous Substances	-	-	-	Free	<b>Free</b>	No Dangerous substances used		

\* is sign for the mandatory (necessary) tests as per specified for system used according to EN 13707:2013

**Flexible sheets for Waterproofing**  
**Determination of Length, Width, and Straightness**  
**EN 1848-1:2000**

Date of testing : **23/09/2021 Thursday**  
 Report No. : 4393/1848-1/2021

**Product Identification**

Product FULL name : NILOFLEX 15 PY 450 Sand 4.50 mm S/E  
 EOC # [ Client ] : NANOTEK - TURKEY  
 Date of production : 22/09/2021 Wednesday  
 Shift of production : Shift 3  
 Compound type : SBS-15 EC/-  
 Reinforcement type : PY JM 032/180

Roll Length : 10 m m  
 Rolls/Pallet : 23 m R/P.

Batch No. : **264 1 11**  
 Upper surfacing : (S00) Sand - Rashidi (200 micron)

Lower surfacing : (E03) (Bitunil ISO Printed English & English) HD PE Film Printed

**Sampling**

	Length	Width	Straightness
Sampling	According to EN 13416		
Number of samples	1 Sample for all		
Test Piece	1 complete undamaged roll		
Dimensions of samples	The dimension of the roll		
Measurements	Length of roll	Width of roll	Max. Deviation
Expression of results	Length nearest to 10 mm	Width nearest to 1 mm	Max. deviation nearest to 1 mm ( $\pm$ -100 )
Conditioning before testing	Not Required except in case of dispute		

**Results**

	Length	Width	Straightness
Measured Value	10020.0 mm	1001.00 mm	102.0 mm
			( $\pm$ -100 ) Max. deviation
Expressed Value	<b>10,020 mm</b>	<b>1,001.0 mm</b>	<b>2 mm</b>

**Laboratory Quality Control**

Chemist



Flexible sheets for Waterproofing  
**Determination of Thickness and Mass per Unit Area**  
EN 1849-1:2000

Date of testing : 23/09/2021 Thursday  
Report No. : 4393/1849-1/2021

**Product Identification**

Product FULL name : NILOFLEX 15 PY 450 Sand 4.50 mm S/E Code: 01401  
EOC # [ Client ] : NANOTEK - TURKEY  
Date of production : 22/09/2021 Wednesday  
Shift of production : Shift 3 Roll Length : 10 m m  
Compound type : SBS-15 EC/- Rolls/Pallet : 23 m R/P.  
Reinforcement type : PY JM 032/180

Batch No. : **264 1 11**  
Upper surfacing : (S00) Sand - Rashidi (200 micron)

Lower surfacing : (E03) (Bitunil ISO Printed English & English) HD PE Film Printed

**Sampling**

	Thickness	Mass per Unit Area
Sampling	According to EN 13416	
Number of samples	1 sample	3 cutting sample from 1
Test Piece	> 800 mm * 100 mm	> 800 mm * > 400mm
Dimensions of samples	use the test piece	100 mm * 100 mm
Measurements	10 places (values)	3 weights (values)
Expression of results	Mean of 10 values to nearest 0.1 mm	Mean of 3 values to nearest 0.1 g multiply by 10 expressed in Kg/m <sup>2</sup>
Conditioning before testing	Not Required except in case of dispute	20 hr. at (23 ± 2) <sup>o</sup> C and humidity (50±5)%

**Results**

	Thickness	Mass per Unit Area
Value 1	4.52 mm	67.40 g
Value 2	4.52 mm	67.10 g
Value 3	4.53 mm	66.60 g
Value 4	4.52 mm	
Value 5	4.53 mm	
Value 6	4.52 mm	
Value 7	4.51 mm	
Value 8	4.51 mm	
Value 9	4.51 mm	
Value 10	4.53 mm	
Average	<b>4.52 mm</b>	<b>67.0 g</b> / 10 =
		<b>6.7 Kg/m<sup>2</sup></b>

**Laboratory Quality Control**

Chemist



Flexible sheets for Waterproofing  
**Determination of Flexibility at Low Temperature**  
 EN 1109:2013

Date of testing : 23/09/2021 Thursday  
 Report No. : 4393/1109/2021

**Product Identification**

Product FULL name : NILOFLEX 15 PY 450 Sand 4.50 mm S/E  
 EOC # [ Client ] : NANOTEK - TURKEY  
 Date of production : 22/09/2021 Wednesday  
 Shift of production : Shift 3  
 Compound type : SBS-15 EC/-  
 Reinforcement type : PY JM 032/180

Roll Length : 10 m m  
 Rolls/Pallet : 23 m R/P.

Batch No. : 264 1 11  
 Upper surfacing : (S00) Sand - Rashidi (200 micron)

Lower surfacing : (E03) (Bitunil ISO Printed English & English) HD PE Film Printed

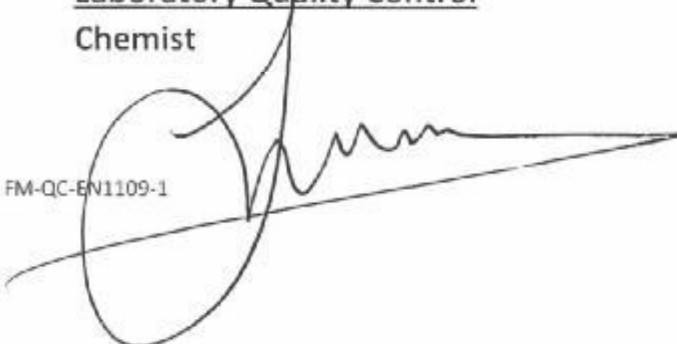
**Sampling**

Flexibility at Low Temperature	
Sampling	According to EN 13416
Number of samples	10 sample (5 + 5)
Test Piece	Cut Longitudinal Direction away from edges 150 mm
Dimensions of samples	140±1 mm * 50±1 mm
Measurements	10 measurements (5 + 5)
Expression of results	Temp. degree in celliseous applied on upper and lower surfaces
Conditioning Before Testing	4 Hr. at 23±2 °c without PE film and separated samples on siliconized paper
Conditioning of Test specimens	1 Hr. ± 5 min. at desired Temp. immersed in Alcohol/water path

**Results**

	Upper Surface (1-5)	Lower Surface (1*-5*)
Specimen 1/1*	-15 °c	-15 °c
Specimen 2/2*	-15 °c	-15 °c
Specimen 3/3*	-15 °c	-15 °c
Specimen 4/4*	-15 °c	-15 °c
Specimen 5/5*	-15 °c	-15 °c
<b>Result</b>	<b>-15 °c</b>	<b>-15 °c</b>

**Laboratory Quality Control**  
 Chemist



Flexible sheets for Waterproofing  
Determination of Flow Resistance at Elevated temperature  
EN 1110:2010

Date of testing : 23/09/2021 Thursday  
Report No. : 4393/1110/2021

**Product Identification**

Product FULL name : NILOFLEX 15 PY 450 Sand 4.50 mm S/E code: 044253  
EOC # [ Client ] : NANOTEK - TURKEY  
Date of production : 22/09/2021 Wednesday  
Shift of production : Shift 3 Roll Length : 10 m m  
Compound type : SBS-15 EC/- Rolls/Pallet : 23 m R/P.  
Reinforcement type : PY JM 032/180  
  
Batch No. : 264 1 11  
Upper surfacing : (S00) Sand - Rashidi (200 micron)  
  
Lower surfacing : (E03) (Bitunil ISO Printed English & English) HD PE Film Printed

**Sampling**

Flow Resistance at Elevated temperature	
Sampling	According to EN 13416
Number of samples	3 samples
Test Piece	Cut rectangular samples away from edges 150 mm
Dimensions of samples	100±1 mm * 50±1 mm to 90mm
Measurements	Distance of whole sample before test and after test
Expression of results	Passed at desired temp. if distance ≤ 2.0 mm and no droplets observed
Conditioning Before Testing	2 Hr. at 23±2 °c without PE film and separated samples on siliconized paper
Duration of Testing	120±2 min. at desired temp.
Conditioning after testing before measuring	at least 120 min at 23±2 °c

**Results**

	Upper Surface (1)	Lower Surface (1*)
Specified temp.	100 °c	100 °c
<b>I. Droplets observed</b>	No droplets	No droplets
<b>II. Difference ΔX*</b>		
Specimen 1/1*	0.05 mm	0.17 mm
Specimen 2/2*	0.17 mm	0.07 mm
Specimen 3/3*	0.12 mm	0.13 mm
<b>Mean</b>	<b>0.1 mm</b>	<b>0.1 mm</b>
<b>Result</b>	<b>Passed</b>	<b>Passed</b>

\* Δx is the difference between initial length of the test specimen and the final length after the test period in mm.

**Laboratory Quality Control**

Chemist



Flexible sheets for Waterproofing  
**Determination of Visible defects**  
EN 1850-1:2000

Date of testing : 23/09/2021 Thursday  
Report No. : 4393/1850/2021

**Product Identification**

Product FULL name : NILOFLEX 15 PY 450 Sand 4.50 mm S/E  
EOC # [ Client ] : NANOTEK - TURKEY  
Date of production : 22/09/2021 Wednesday  
Shift of production : Shift 3  
Compound type : SBS-15 EC/-  
Reinforcement type : PY JM 032/180  
Batch No. : 264 1 11  
Upper surfacing : (S00) Sand - Rashidi (200 micron)  
Lower surfacing : (E03) (Bitunil ISO Printed English & English) HD PE Film Printed

Roll Length : 10 m m  
Rolls/Pallet : 23 m R/P.

**Sampling**

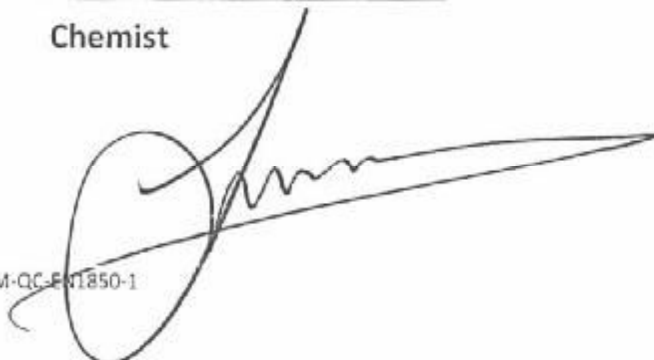
	Visible Defects
Sampling	According to EN 13416
Number of samples	1 Complete roll
Test Piece	The Complete Roll
Dimensions of samples	Full Roll Dimension
Measurements	5 main visual examination
Expression of results	Visual information by naked eye
Conditioning Before Testing	Not required but in case of dispute conditioning at least 20 hr. at 23 ± 2 °C

**Results**

	Examination of Top Surface	Examination of Underside
Blisters	free	free
Cracks	free	free
Holes	free	free
Naked Spots	free	free
Other Noticeable defects	-	-

**Laboratory Quality Control**

Chemist



Flexible sheets for Waterproofing  
Determination of Watertightness  
EN 1928:2000

Date of testing : 26/09/2021 Sunday  
Report No. : 4393/1928/2021

**Product Identification**

Join with Initial Type Test : 00100  
Product FULL name : NILOFLEX 15 PY 450 Sand 4.50 mm S/E  
EOC # [ Client ] : NANOTEK - TURKEY  
Date of production : 22/09/2021 Wednesday  
Shift of production : Shift 3  
Compound type : SBS-15 EC/-  
Reinforcement type : PY JM 032/180  
Batch No. : 264 1 11  
Upper surfacing : (S00) Sand - Rashidi (200 micron)  
Lower surfacing : (E03) (Bitunil ISO Printed English & English) HD PE Film Printed

**Sampling**

Method	Determination of Watertightness	
	Method A	Method B (if Applied)
Sampling	According to EN 13416	According to EN 13416
Number of samples	3 from different roll parts	3 from different roll parts
Test Piece	3	3
Dimensions of samples	Circular with Diameter 200 ±2 mm	Equal to slotted plate at least 130 mm
Measurments	at 23±5 °c	at 23±5 °c
Expression of results	Pass:if no color change or Fail:if color change	Pass:if no color change or Fail:if color change
Conditioning before testing	6 Hrs. at 23±5 °c	6 Hrs. at 23±5 °c
Test Duration	24±1 hr.	Assesment after 1 hr. test duration
Pressure applied	60 kl's.	according to specified pressure

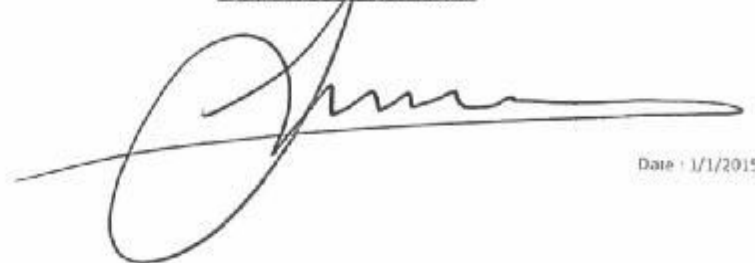
**RESULTS**

	Applied Pressure for A		Applied Pressure for B	
	Color Change	Result	Evidence of leakadge	Result
Sample 1	No	PASS	-	-
Sample 2	No	PASS	-	-
sample 3	No	PASS	-	-

**Tested and Reported by**

**Quality Control Responsible**

**Laboratory Manager**



Flexible sheets for Waterproofing  
**Determination of Resistance to Static loading**  
 EN 12730:2015 Method A

Date of testing : **25/09/2021 Saturday**  
 Report No. : 4393/12730/2021

**Product Identification**

Join with Initial Type Test : 00100

Product FULL name : NILOFLEX 15 PY 450 Sand 4.50 mm S/E  
 EOC # [ Client ] : NANOTEK - TURKEY  
 Date of production : 22/09/2021 Wednesday  
 Shift of production : Shift 3  
 Compound type : SBS-15 EC/-  
 Reinforcement type : PY JM 032/180  
 Batch No. : **264 1 11**  
 Upper surfacing : (S00) Sand - Rashidi (200 micron)  
 Lower surfacing : (E03) (Bitunil ISO Printed English & English) HD PE Film Printed

Code: 00100

**Sampling**

Determination of Resistance to Static loading	
Sampling	According to EN 13416
Number of samples	1 From part of roll with 10cm exclusion from both roll sides
Test Piece	3
Dimensions of samples	550 mm * 550 mm ±2 mm
Measurments	Visual check for cracks or Leakadge
Expression of results	No cracks or Pass at specified load in Kg
Conditioning before testing	24 hrs. at specified test condition (23 ±2 °c)
Support	Soft Support Polystyrene
Duration of Test	24 Hrs. at specified test condition (23 ±2 °c) for each loading interval.

**Results**
**Applied Loads**

	0	5	10	15	20	25	30	35	40	Kg
Sample 1	-	-	-	-	-	25	-	-	-	
Sample 2	-	-	-	-	-	25	-	-	-	
Sample 3	-	-	-	-	-	25	-	-	-	

Max. Load : 25 Kg

**Cracks or Leakage**

	0	5	10	15	20	25	30	35	40	Kg
Sample 1	-	-	-	-	-	No	-	-	-	
Sample 2	-	-	-	-	-	No	-	-	-	
Sample 3	-	-	-	-	-	No	-	-	-	

End Result : PASS

**Tested and Reported by**
**Quality Control Responsible**
**Laboratory Manager**




Flexible sheets for Waterproofing  
**Determination of Resistance to Impact**  
EN 12691:2018 Method B

Date of testing : 26/09/2021 Sunday  
Report No. : 4393/12691/2021

**Product Identification**

Join with Inatial Type Test : 00100

Product FULL name : NILOFLEX 15 PY 450 Sand 4.50 mm S/E  
EOC # [ Client ] : NANOTEK - TURKEY  
Date of production : 22/09/2021 Wednesday  
Shift of production : Shift 3  
Compound type : SBS-15 EC/-  
Reinforcement type : PY JM 032/180  
Batch No. : 264 1 11  
Upper surfacing : (S00) Sand - Rashidi (200 micron)  
Lower surfacing : (E03) (Bitunil ISO Printed English & English) HD PE Film Printed

**Sampling**

Determination of Resistance to Impact	
Sampling	According to EN 13416
Number of samples	1 From different positions of roll with 10cm exclusion from both roll sides
Test Piece	5
Dimensions of samples	150 mm * 150 mm
Measurments	Visual check for cracks or Leakadge
Expression of results	No cracks or leakadge at specified drop height in mm
Conditioning before testing	24 hrs. at specified test condition (23 ±2. °c)
Support	Soft Support Polystyrene
Drop mass	500 ± 5 gm including Punchring tool
Punchring tool	Spherical with diameter 12.7 ±1 mm

**Results**

**Applied Loads**

	300	350	400	450	500	600	700	800	900	1000	1250	1500
Sample 1	-	-	-	-	-	-	-	-	900	-	-	-
Sample 2	-	-	-	-	-	-	-	-	900	-	-	-
Sample 3	-	-	-	-	-	-	-	-	900	-	-	-
Sample 4	-	-	-	-	-	-	-	-	900	-	-	-
Sample 5	-	-	-	-	-	-	-	-	900	-	-	-

Max. Load : 900 mm

**Cracks or Leakage**

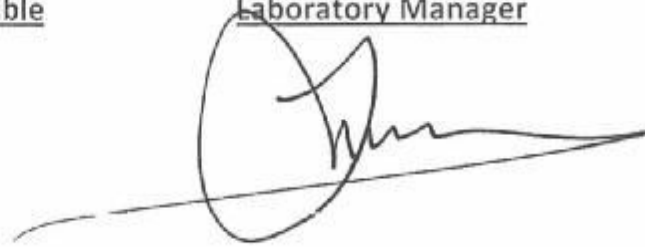
	300	350	400	450	500	600	700	800	900	1000	1250	1500
Sample 1	-	-	-	-	-	-	-	-	No	-	-	-
Sample 2	-	-	-	-	-	-	-	-	No	-	-	-
Sample 3	-	-	-	-	-	-	-	-	No	-	-	-
Sample 4	-	-	-	-	-	-	-	-	No	-	-	-
Sample 5	-	-	-	-	-	-	-	-	No	-	-	-

End Result : PASS

**Tested and Reported by**

**Quality Control Responsible**

**Laboratory Manager**



Flexible sheets for Waterproofing  
**Determination of Dimensional stability**  
EN 1107-1:2000

Date of testing : 27/09/2021 Monday  
Report No. : 4393/1107-1/2021

**Product Identification**

Join with Inatial Type Test : 00100

Product FULL name : NILOFLEX 15 PY 450 Sand 4.50 mm S/E  
EOC # [ Client ] : NANOTEK - TURKEY  
Date of production : 22/09/2021 Wednesday  
Shift of production : Shift 3  
Compound type : SBS-15 EC/-  
Reinforcement type : PY JM 032/180  
Batch No. : 264 1 11  
Upper surfacing : (S00) Sand - Rashidi (200 micron)  
Lower surfacing : (E03) (Bitunil ISO Printed English & English) HD PE Film Printed

Roll Length : 10 m m  
Rolls/Pallet : 23 m R/P.

**Sampling**

Determination of Dimensional stability	
Sampling	According to EN 13416
Number of samples	1 Part of Roll taken test pieces from uniformly over the width in larger dimention with Longitudinal direction
Test Piece	5
Dimensions of samples	250 ± 1 mm * 50 ± 1 mm
Measurments	Measuring using optical device the difference distance between inital mark referance L <sub>0</sub> and second mark for each test specimen to nearest 0.05 mm
Expression of results	The % of the difference distance between Inital mark referance L <sub>0</sub> and second mark with refereance to referance distance L <sub>0</sub> . it may be positive (+) expansion or negative (-) contraction.
Conditioning before testing	at 23±2 °c for 24 hr.
Conditioning during testing	at 80±2 °c for 24 hr. ± 10 min. duration
Conditioning just before measurments	at 23±2 °c for at least 4 hr.

**Results**

	Referance	Difference	% of change	Sign. Meaning
Sample 1	200	-0.88	-0.44	Contraction
Sample 2	200	-0.82	-0.41	Contraction
Sample 3	200	-0.88	-0.44	Contraction
Sample 4	200	-0.86	-0.43	Contraction
Sample 5	200	-0.86	-0.43	Contraction
Arthmatic Mean :			-0.43	Contraction

Result close to nearest 0.1 %

**-0.43**

**Tested and Reported by**

**Quality Control Responsible**

**Laboratory Manager**



BITUNIL  
 9 EL Saad El Aaly St. Wadi El Kamar  
 Alexandria , EGYPT

Tensile test extensometer EN 12311

Test type: Tensile  
 Operator name: EMAD GHONAME  
 Sample Identification: 264111 TEL  
 Interface Type: 4200/4300/4400

Instron Corporation  
 Series IX Automated Materials Testing System 8.24.00  
 Test Date: 23 September 2021

Sample Rate (pts/secs): 6.6670  
 Crosshead Speed: 100.0000 mm/min  
 Second Speed: 0.0000 mm/min  
 Third Speed: 0.0000 mm/min  
 Full Scale Load Range: 5.0000 kN  
 Humidity ( % ): 50  
 Temperature: 23 C

Membrane/Thickness NILOFLEX-15PY 4.5M S/E \*\* SAMPLE \*\*

Reinforcement Type \*\*\* P.S JM 032-180 \*\*\*

Compound / Batch no. SBS -15/EC Batch No\*\*264111\*\*

Production date 22/09/2021 III

Direction LONGITUDINAL

Sample comments:  
 Conditioning at least 20 hrs

	Load at Max.Load ( N/5cm )	Load at Cursor Point 1 ( N/5cm )	% Strain at Max.Load (%)	% Strain at Cursor Point 1 (%)
1	1074.000	1070.460	32.630	32.859
2	893.700	885.360	32.340	32.657
3	871.100	867.380	37.660	38.187
4	891.800	880.000	35.440	36.093
5	1019.000	993.280	30.900	31.221
Mean	949.920	939.296	33.794	34.204
S.D.	90.718	89.044	2.716	2.852

BITUNIL  
 9 EL Saad El Aaly St. Wadi El Kamar  
 Alexandria , EGYPT

Tensile test extensometer EN 12311

Test type: Tensile Instron Corporation  
 Operator name: EMAD GHONAME Series IX Automated Materials Testing System 8.24.00  
 Sample Identification: 264111 TET Test Date: 23 September 2021  
 Interface Type: 4200/4300/4400

Sample Rate (pts/secs): 6.6670 Humidity ( % ): 50  
 Crosshead Speed: 100.0000 mm/min Temperature: 23 C  
 Second Speed: 0.0000 mm/min  
 Third Speed: 0.0000 mm/min  
 Full Scale Load Range: 5.0000 kN

Membrane/Thickness NILOFLEX-15PY 4.5M S/E \*\* SAMPLE \*\*

Reinforcement Type \*\*\* P.S JM 032-180 \*\*\*

Compound / Batch no. SBS -15/EC Batch No\*\*264111\*\*

Production date 22/09/2021 III

Direction TRANSVERSAL

Sample comments:  
 Conditioning at least 20 hrs

	Load at Max.Load ( N/5cm )	Load at Cursor Point 1 ( N/5cm )	% Strain at Max.Load (%)	% Strain at Cursor Point 1 (%)
1	703.400	702.280	42.340	42.818
2	662.000	658.520	39.110	39.610
3	647.000	635.700	34.560	34.993
4	715.200	711.670	40.600	41.114
5	706.000	703.080	39.450	39.959
Mean	686.720	682.250	39.212	39.699
S.D.	30.207	33.282	2.890	2.914

BITUNIL  
 9 EL Saad El Aaly St. Wadi El Kamar  
 Alexandria , EGYPT

Tensile test ASTM D-5147

Test type: Tensile  
 Operator name: EMAD GHONAMI  
 Sample Identification: 264111 TAL  
 Interface Type: 4200/4300/4400

Instron Corporation  
 Series IX Automated Materials Testing System 8.24.00  
 Test Date: 23 September 2021

Sample Rate (pts/secs): 10.0000  
 Crosshead Speed: 50.0000 mm/min  
 Second Speed: 0.0000 mm/min  
 Third Speed: 0.0000 mm/min  
 Full Scale Load Range: 5.0000 kN

Humidity ( % ): 50  
 Temperature: 23 C

Membrane/Thickness NILOFLEX-15PY 4.5M S/E \*\* SAMPLE \*\*  
 Reinforcement Type \*\*\* P.S JM 032-180 \*\*\*  
 Compound / Batch no. SBS -15/EC Batch No\*\*264111\*\*  
 Production date 22/09/2021 III  
 Direction LONGITUDINAL

Sample comments:  
 Conditioning at least 20 hrs

	Load at Max.Load (N/5cm)	Load at Cursor Point I (N/5cm)	% Strain at Cursor Point I (%)	% Strain at Max.Load (%)	Load at Cursor Point I (KN/m)
1	939.400	922.940	54.150	54.093	18.459
2	947.400	947.100	55.598	55.653	18.942
3	966.000	964.820	55.912	55.973	19.296
4	940.200	939.860	53.925	53.987	18.797
5	848.800	846.960	52.681	52.787	16.939
Mean	928.360	924.336	54.453	54.499	18.487
S.D.	45.747	45.791	1.318	1.310	0.916

BITUNIL  
 9 EL Saad El Aaly St. Wadi El Kamar  
 Alexandria , EGYPT

Tensile test ASTM D-5147

Test type: Tensile Instron Corporation  
 Operator name: EMAD GHONAME Series IX Automated Materials Testing System 8.24.00  
 Sample Identification: 264111 TAT Test Date: 23 September 2021  
 Interface Type: 4200/4300/4400

Sample Rate (pts/secs): 10.0000 Humidity ( % ):50  
 Crosshead Speed: 50.0000 mm/min Temperature: 23 C  
 Second Speed: 0.0000 mm/min  
 Third Speed: 0.0000 mm/min  
 Full Scale Load Range: 5.0000 kN

Membrane/Thickness NILOFLEX-15PY 4.5M S/E \*\* SAMPLE \*\*

Reinforcement Type \*\*\* P.S JM 032-180 \*\*\*

Compound / Batch no. SBS -15/EC Batch No\*\*264111\*\*

Production date 22/09/2021 III

Direction TRANSVERSAL

Sample comments:  
 Conditioning at least 20 hrs

	Load at Max.Load (N/5cm)	Load at Cursor Point I (N/5cm)	% Strain at Cursor Point I (%)	% Strain at Max.Load (%)	Load at Cursor Point I (KN/m)
1	711.600	711.660	68.123	68.173	14.233
2	619.600	619.580	57.603	57.653	12.392
3	636.800	636.500	62.823	62.880	12.730
4	670.600	669.780	57.714	57.933	13.396
5	675.400	674.880	62.151	62.320	13.498
Mean	662.800	662.480	61.683	61.792	13.250
S.D.	35.858	35.851	4.341	4.307	0.717

BFTUNIL  
9 EL Saad El Aaly St. Wadi El Kamar  
Alexandria , EGYPT

Tearing Strength ASTM D-4073-94

Test type: Tensile  
Operator name: EMAD GHONAME  
Sample Identification: 264111 RAL  
Interface Type: 4200/4300/4400

Instron Corporation  
Series IX Automated Materials Testing System 8.24 .00  
Test Date: 23 September 2021

Sample Rate (pts/secs): 10.0000  
Crosshead Speed: 100.0000 mm/min  
Second Speed: 0.0000 mm/min  
Third Speed: 0.0000 mm/min  
Full Scale Load Range: 5.0000 kN

Humidity ( % ): 50  
Temperature: 23 C

Membrane/Thickness NILOFLEX-15PY 4.5M S/E \*\* SAMPLE \*\*  
Reinforcement Type \*\*\* P.S JM 032-180 \*\*\*  
Compound / Batch no. SBS -15/EC Batch No\*\*264111\*\*  
Production date 22/09/2021 III  
Direction LONGITUDINAL

Sample comments:  
Conditioning at least 20 hrs

	Load at Max.Load (N)	Avg Ld Between Limits 1 (N)
1	687.800	653.959
2	718.100	664.074
Mean	702.950	659.017
S.D.	21.425	7.153

BITUNIL  
9 EL Saad El Aaly St. Wadi El Kamar  
Alexandria , EGYPT

Tearing Strength ASTM D-4073-94

Test type: Tensile Instron Corporation  
Operator name: EMAD GHONAME Series IX Automated Materials Testing System 8.24 .00  
Sample Identification: 264111 RAT Test Date: 23 September 2021  
Interface Type: 4200/4300/4400

Sample Rate (pts/secs): 10.0000  
Crosshead Speed: 100.0000 mm/min Humidity ( % ): 50  
Second Speed: 0.0000 mm/min Temperature: 23 C  
Third Speed: 0.0000 mm/min  
Full Scale Load Range: 5.0000 kN

Membrane/Thickness NILOFLEX-15PY 4.5M S/E \*\* SAMPLE \*\*

Reinforcement Type \*\*\* P.S JM 032-180 \*\*\*

Compound / Batch no. SBS -15/EC Batch No\*\*264111\*\*

Production date 22/09/2021 III

Direction TRANSVERSAL

Sample comments:

Conditioning at least 20 hrs

	Load at Max.Load (N)	Avg Ld Between Limits I (N)
1	572.900	522.484
2	409.700	388.584
Mean	491.300	455.534
S.D.	115.400	94.682



BITUNIL  
9 EL Saad El Aaly St. Wadi ElKamar  
Alexandria , EGYPT

Tearing Strength EN 12310-1

Test type: Tensile  
Operator name: EMAD GHONAME  
Sample Identification: 264111 REL  
Interface Type: 4200/4300/4400

Instron Corporation  
Series IX Automated Materials Testing System 8.24.00  
Test Date: 23 September 2021

Sample Rate (pts/secs): 10.0000  
Crosshead Speed: 100.0000 mm/min  
Second Speed: 0.0000 mm/min  
Third Speed: 0.0000 mm/min  
Full Scale Load Range: 5.0000 kN  
Humidity ( % ): 50  
Temperature: 23 C

Membrane/Thickness NILOFLEX-15PY 4.5M S/E \*\* SAMPLE \*\*  
Reinforcement Type \*\*\* P.S JM 032-180 \*\*\*  
Compound / Batch no. SBS -15/EC Batch No\*\*264111\*\*  
Production date 22/09/2021 III  
Direction LONGITUDINAL

Sample comments:  
Conditioning at least 20 hrs

	Load at Max.Load (N)	Avg Ld Between Limits 1 (N)
1	270.300	225.678
2	242.800	210.815
3	242.000	207.622
4	242.100	200.955
5	239.100	195.406
Mean	247.260	208.095
S.D.	12.958	11.498

BITUNIL  
9 EL. Saad El Aaly St. Wadi El Kamar  
Alexandria , EGYPT

Tearing Strength EN 12310-1

Test type: Tensile  
Operator name: EMAD GHONAME  
Sample Identification: 264111 RFT  
Interface Type: 4200/4300/4400

Instron Corporation  
Series IX Automated Materials Testing System 8.24.00  
Test Date: 23 September 2021

Sample Rate (pts/secs): 10.0000  
Crosshead Speed: 100.0000 mm/min  
Second Speed: 0.0000 mm/min  
Third Speed: 0.0000 mm/min  
Full Scale Load Range: 5.0000 kN

Humidity ( % ): 50  
Temperature: 23 C

Membrane/Thickness NILOFLEX-15PY 4.5M S/E \*\* SAMPLE \*\*

Reinforcement Type \*\*\* P.S JM 032-180 \*\*\*

Compound / Batch no. SBS -15/EC Batch No\*\*264111\*\*

Production date 22/09/2021 III

Direction TRANSVERSAL

Sample comments:  
Conditioning at least 20 hrs

	Load at Max.Load (N)	Avg Ld Between Limits I (N)
1	247.400	230.610
2	285.800	267.180
3	284.700	259.834
4	251.500	227.878
5	352.900	300.374
Mean	284.460	257.175
S.D.	42.266	29.738

BITUNIL  
 9 El. Saad El Aaly St. Wadi El Kamar  
 Alexandria , EGYPT

Shear resistance of Joint EN-12317-1

Test type: Tensile  
 Operator name: EMAD GHONAME  
 Sample Identification: 264111 JEL  
 Interface Type: 4200/4300/4400  
 Intron Corporation  
 Series IX Automated Materials Testing System 8.24.00  
 Test Date: 25 September 2021

Sample Rate (pts/sees): 10.0000  
 Crosshead Speed: 200.0000 mm/min  
 Second Speed: 0.0000 mm/min  
 Third Speed: 0.0000 mm/min  
 Full Scale Load Range: 5.0000 kN  
 Humidity ( % ): 50  
 Temperature: 23 C

Membrane/Thickness NILOFLEX-15PY 4.5M S/E \*\* SAMPLE \*\*  
 Reinforcement Type \*\*\* P.S JM 032-180 \*\*\*  
 Compound / Batch no. SBS -15/EC Batch No\*\*264111\*\*  
 Production date 22/09/2021 III  
 Direction LONGITUDINAL

Sample comments:  
 Conditioning at least 20 hrs

	Load at Max.Load (N/5cm)	Load at Cursor Point 1 (N/5cm)	% Strain at Max.Load (%)	% Strain at Cursor Point 1 (%)
1	965.800	936.240	27.145	29.231
2	913.000	868.180	28.495	29.997
3	938.300	823.620	26.070	29.320
4	991.900	900.000	26.065	28.897
5	976.500	908.720	26.545	30.047
Mean	957.100	887.352	26.864	29.499
S.D.	31.470	43.116	1.014	0.504

BITUNIL  
 9 EL Saad El Aaly St. Wadi El Kamar  
 Alexandria , EGYPT

Shear resistance of Joint EN-12317-1

Test type: Tensile Instron Corporation  
 Operator name: EMAD GHONAME Series IX Automated Materials Testing System 8.24.00  
 Sample Identification: 264111 JET Test Date: 25 September 2021  
 Interface Type: 4200/4300/4400

Sample Rate (pts/secs): 10.0000 Humidity ( % ): 50  
 Crosshead Speed: 200.0000 mm/min Temperature: 23 C  
 Second Speed: 0.0000 mm/min  
 Third Speed: 0.0000 mm/min  
 Full Scale Load Range: 5.0000 kN

Membrane/Thickness NILOFLEX-15PY 4.5M S/E \*\* SAMPLE \*\*  
 Reinforcement Type \*\*\* P.S JM 032-180 \*\*\*  
 Compound / Batch no. SBS -15/EC Batch No\*\*264111\*\*  
 Production date 22/09/2021 III  
 Direction TRANSVERSAL  
 Sample comments:  
 Conditioning at least 20 hrs.

	Load at Max.Load (N/5cm)	Load at Cursor Point 1 (N/5cm)	% Strain at Max.Load (%)	% Strain at Cursor Point 1 (%)
1	615.600	601.340	45.155	48.571
2	637.300	633.020	41.430	42.014
3	653.400	644.830	36.460	37.877
4	649.700	640.000	44.880	50.048
5	615.300	606.970	48.500	50.668
Mean	634.260	625.232	43.285	45.836
S.D.	18.177	19.794	4.562	5.624

BITUNIL  
9 El. Saad El Aaly St. Wadi El Kamar  
Alexandria , EGYPT

Peeling @ 180 EN-12316-2

Test type: Tensile  
Operator name: EMAD GHONAME  
Sample Identification: 264111 PEL  
Interface Type: 4200/4300/4400

Instron Corporation  
Series IX Automated Materials Testing System 8.24.00  
Test Date: 25 September 2021

Sample Rate (pts/secs): 10.0000  
Crosshead Speed: 100.0000 mm/min  
Second Speed: 0.0000 mm/min  
Third Speed: 0.0000 mm/min  
Full Scale Load Range: 5.0000 kN

Humidity ( % ): 50  
Temperature: 23 C

Membrane/Thickness NILOFLEX-15PY 4.5M S/E \*\* SAMPLE \*\*

Reinforcement Type \*\*\* P.S JM 032-180 \*\*\*

Compound / Batch no. SBS -15/EC Batch No\*\*264111\*\*

Production date 22/09/2021 III

Direction ( 5 x 40 ) Peeling @ 180

Sample comments:  
Conditioning at least 20 hrs

	Avg Ld Between Limits I ( N/5cm )	Load at Max.Load ( N/5cm )
1	127.924	143.400
2	134.017	154.600
3	140.912	153.300
Mean	134.284	150.433
S.D.	6.498	6.126