

Family Name : <b>NILOFLEX</b>	Sampling methodology <b>According to EN 13416:2001</b>	Compound : <b>SBS -15</b>
Product Name : <b>NILOFLEX 15 PY</b>	Batch No. <b>266 1 06</b>	Reinforcement : <b>POLYESTER as P.S JM 032-180</b>
Product Full Name : <b>NILOFLEX 15 PY 350 Sand 3.5mm S/E</b>		Upper Surface : <b>SAND</b>
Type of Product : <b>an Elastomeric SBS</b>		Lower Surface : <b>POLYETHYLENE</b>
Type of Reinforcement : <b>POLYESTER</b>		Production date : <b>26/09/2021</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>	4444/1850-1	27/09/2021	
* Thickness	EN 1849-1	mm	-5%	3.5	<b>3.50</b>	4444/1849-1	27/09/2021	
* Weight	EN 1849-1	kg/m2	-10%	-	-	-	-	
* Length	EN 1848-1	m	-1%	10	<b>10.09</b>	4444/1848-1	27/09/2021	
* Width	EN 1848-1	m	-1%	1	<b>1.000</b>	4444/1848-1	27/09/2021	
* Straightness	EN 1848-1	-	20mm/10m	± 10	<b>2</b>	4444/1848-1	27/09/2021	
* Flexibility at low temperature	EN 1109	°c/ø mm *	≤	-15	U.S. : <b>-15</b> L.S. : <b>-15</b>	4444/1109	27/09/2021	
* Flow resistance at elevated Temp.	EN 1110	°c	≥	100	<b>100</b>	4444/1110	27/09/2021	
* Water Impermeability (Water tightness)	EN 1928 method A	60 KPa	Passed	Passed	<b>60</b>	4444/1928	28/09/2021	
- 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>925</b>	Machine report	27/09/2021	
* Tensile Strength Transversal	EN 12311-1	N/50mm	-20%	700	<b>620</b>	Machine report	27/09/2021	
* Elongation @ Break Longitudinal	EN 12311-1	%	-15 absolute (polyester only)	45	<b>33</b>	Machine report	27/09/2021	
* Elongation @ Break Transversal	EN 12311-1	%	-15 absolute (polyester only)	50	<b>42</b>	Machine report	27/09/2021	
- Tear resistance (nail shank) :Longitudinal	EN 12310-1	N	-30%	225	<b>238</b>	Machine report	27/09/2021	
- Tear resistance (nail shank) :Transversal	EN 12310-1	N	-30%	225	<b>290</b>	Machine report	27/09/2021	
- Dimensional stability	EN 1107-1	%	≤	± 0.5	<b>-0.43</b>	4444/1107-1	03/10/2021	
- Resistance to Static loading	EN12730 method A	kg	Min.	25	<b>25</b>	4444/12730	29/09/2021	
- Resistance to Impact	EN12691 method B	mm	Min.	900	<b>900</b>	4444/12691	28/09/2021	
- Peel resistance of joints	EN 12316-1	N/50mm	-20N	-	<b>134</b>	Machine report	28/09/2021	
- Shear resistance of joints :Longitudinal	EN 12317-1	N/50mm	-20%	950	<b>927</b>	Machine report	28/09/2021	
- Shear resistance of joints:Transversal	EN 12317-1	N/50mm	-20%	700	<b>613</b>	Machine report	28/09/2021	
- 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 : 27/09/2021 Monday  
Report No. : 4444/1848-1/2021

**Product Identification**

Product FULL name : NILOFLEX 15 PY 350 Sand 3.50 mm E/E  
EOC # [ Client ] : NANOTEK - TURKEY  
Date of production : 26/09/2021 Sunday  
Shift of production : Shift 1  
Compound type : SBS-15 EC/-  
Reinforcement type : PY JM 032/180

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

Batch No. : 266 1 06  
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 ( ğ -100 )
Conditioning before testing	Not Required except in case of dispute		

**Results**

	Length	Width	Straightness
Measured Value	10090.0 mm	1000.00 mm	102.0 mm
			( ğ -100 ) Max. deviation
Expressed Value	<b>10,090 mm</b>	<b>1,000.0 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 : 27/09/2021 Monday  
 Report No. : 4444/1849-1/2021

**Product Identification**

Product FULL name : NILOFLEX 15 PY 350 Sand 3.50 mm E/E code:04151  
 EOC # [ Client ] : NANOTEK - TURKEY  
 Date of production : 26/09/2021 Sunday  
 Shift of production : Shift 1 Roll Length : 10 m m  
 Compound type : SBS-15 EC/- Rolls/Pallet : 23 m R/P.  
 Reinforcement type : PY JM 032/180

Batch No. : **266 1 06**  
 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	3.48 mm	51.50 g
Value 2	3.49 mm	53.30 g
Value 3	3.52 mm	54.20 g
Value 4	3.51 mm	
Value 5	3.51 mm	
Value 6	3.50 mm	
Value 7	3.52 mm	
Value 8	3.49 mm	
Value 9	3.48 mm	
Value 10	3.50 mm	
Average	<b>3.50 mm</b>	<b>53.0 g</b>
		\ 10 =
		<b>5.3 Kg/m<sup>2</sup></b>

**Laboratory Quality Control**  
 Chemist



Flexible sheets for Waterproofing  
**Determination of Flexibility at Low Temperature**  
**FN 1109-2013**

Date of testing : 27/09/2021 Monday  
 Report No. : 4444/1109/2021

**Product Identification**

Product FULL name : NILOFLEX 15 PY 350 Sand 3.50 mm E/E code:04133  
 EOC # [ Client ] : NANOTEK - TURKEY  
 Date of production : 26/09/2021 Sunday  
 Shift of production : Shift 1 Roll Length : 10 m m  
 Compound type : SBS-15 EC/- Rolls/Pallet : 23 m R/P.  
 Reinforcement type : PY JM 032/180

Batch No. : 266 1 06  
 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</b>	<b>°C</b>	<b>-15</b>	<b>°C</b>

**Laboratory Quality Control**

Chemist

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

Date of testing : 27/09/2021 Monday  
 Report No. : 4444/1110/2021

**Product Identification**

Product FULL name : NILOFLEX 15 PY 350 Sand 3.50 mm E/E code: 04153  
 EOC # [ Client ] : NANOTEK - TURKEY  
 Date of production : 26/09/2021 Sunday  
 Shift of production : Shift 1  
 Compound type : SBS-15 EC/- Roll Length : 10 m m  
 Reinforcement type : PY JM 032/180 Rolls/Pallet : 23 m R/P.

Batch No. : 266 1 06  
 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 Place	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*	0.12	mm	0.15	mm
Specimen 2/2*	0.15	mm	0.13	mm
Specimen 3/3*	0.06	mm	0.14	mm
<b>Mean</b>	0.1	mm	0.1	mm
<b>Result</b>	Passed		Passed	

\* 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 : 27/09/2021 Monday  
 Report No. : 4444/1850/2021

**Product Identification**

Product FULL name : NILOFLEX 15 PY 350 Sand 3.50 mm E/E code:04153  
 EOC # [ Client ] : NANOTEK - TURKEY  
 Date of production : 26/09/2021 Sunday  
 Shift of production : Shift 1 Roll Length : 10 m m  
 Compound type : SBS-15 EC/- Rolls/Pallet : 23 m R/P.  
 Reinforcement type : PY JM 032/180  
 Batch No. : **266 1 06**  
 Upper surfacing : (S00) Sand - Rashidi (200 micron)  
 Lower surfacing : (E03) (Bitunil ISO Printed English & English) HD PE Film Printed

**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 : 28/09/2021 Tuesday  
 Report No. : 4444/1928/2021

**Product Identification**

Join with Iniatial Type Test : 00100

Product FULL name : NILOFLEX 15 PY 350 Sand 3.50 mm E/E  
 EOC # [ Client ] : NANOTEK - TURKEY  
 Date of production : 26/09/2021 Sunday  
 Shift of production : Shift 1  
 Compound type : SBS-15 EC/-  
 Reinforcement type : PY JM 032/180  
 Batch No. : 266 1 06  
 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**

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 sloted 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
Presuure applied	60 kPs.	according to specified pressure

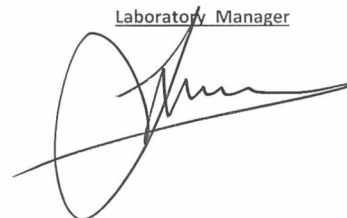
**Results**

	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 : ~~29/09/2021~~ Wednesday  
 Report No. : 4444/12730/2021

**Product Identification**

Join with Initial Type Test : 00100

Product FULL name : NILOFLEX 15 PY 350 Sand 3.50 mm E/E  
 EOC # [ Client ] : NANOTEK - TURKEY  
 Date of production : 26/09/2021 Sunday  
 Shift of production : Shift 1  
 Compound type : SBS-15 EC/-  
 Reinforcement type : PY JM 032/180  
 Batch No. : **266 1 06**  
 Upper surfacing : (S00) Sand - Rashidi (200 micron)  
 Lower surfacing : (E03) (Bitunil ISO Printed English & English) HD PE Film Printed

Code: 00154

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

**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
Measurements	Visual check for cracks or Leakage
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**

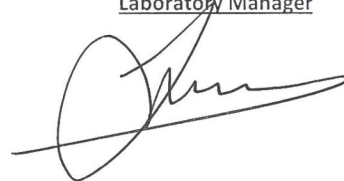
	0	5	10	15	20	25	30	35	40	Kg
Sample 1	-	-	-	-	-	No	-	-	-	
Sample 2	-	-	-	-	-	No	-	-	-	
Sample 3	-	-	-	-	-	No	-	-	-	

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 : 28/09/2021 Tuesday  
Report No. : 4444/12691/2021

**Product Identification**

Join with Inatial Type Test : 00100

Product FULL name : NILOFLEX 15 PY 350 Sand 3.50 mm E/E  
EOC # [ Client ] : NANOTEK - TURKEY  
Date of production : 26/09/2021 Sunday  
Shift of production : Shift 1  
Compound type : SBS-15 EC/-  
Reinforcement type : PY JM 032/180  
Batch No. : 266 1 06  
Upper surfacing : (S00) Sand - Rashidi (200 micron)  
Lower surfacing : (E03) (Bitunil ISO Printed English & English) HD PE Film Printed

code:04151

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

**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 : 03/10/2021 Sunday  
Report No. : 4444/1107-1/2021

**Product Identification**

Join with Inatial Type Test : 00100

Product FULL name : NILOFLEX 15 PY 350 Sand 3.50 mm E/E  
EOC # [ Client ] : NANOTEK - TURKEY  
Date of production : 26/09/2021 Sunday  
Shift of production : Shift 1  
Compound type : SBS-15 EC/-  
Reinforcement type : PY JM 032/180  
Batch No. : 266 1 06  
Upper surfacing : (S00) Sand - Rashidi (200 micron)  
Lower surfacing : (E03) (Bitunil ISO Printed English & English) HD PE Film Printed

code:01031

**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 dimation 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 initial mark referance L <sub>0</sub> and second mark with referance 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**



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Tensile test extensometer EN 12311

Test type: Tensile  
Operator name: EMAD GHONAME  
Sample Identification: 266106 TEL  
Interface Type: 4200/4300/4400  
Instron Corporation  
Series IX Automated Materials Testing System 8.24.00  
Test Date: 27 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 3.5M S/E \*\* NANOTEK \*\*

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

Compound / Batch no. SBS -15/EC Batch No\*\*266106\*\*

Production date 26/09/2021 1

Direction LONGITUDINAL

Sample comments:  
Conditioning at least 20 hrs

	Load at Max.Load ( N/5cm )	Load at Cursor Point I ( N/5cm )	% Strain at Max.Load (%)	% Strain at Cursor Point I (%)
1	839.500	835.970	35.950	36.536
2	878.400	877.040	31.370	31.610
3	914.100	909.790	31.090	31.342
4	1070.000	1053.690	33.880	34.657
5	927.500	923.750	32.090	32.604
Mean	925.900	920.048	32.876	33.350
S.D.	87.504	82.003	2.033	2.207

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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: 266106 TET Test Date: 27 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 3.5M S/E \*\* NANOTEK \*\*

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

Compound / Batch no. SBS -15/EC Batch No\*\*266106\*\*

Production date 26/09/2021 I

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	627.400	624.690	39.760	40.187
2	585.500	578.790	41.520	42.147
3	622.600	620.400	44.560	45.503
4	658.300	654.760	41.090	41.785
5	608.900	604.290	43.970	44.818
Mean	620.540	616.586	42.180	42.888
S.D.	26.648	27.916	2.022	2.215

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Tensile test ASTM D-5147

Test type: Tensile  
 Operator name: EMAD GHONAME  
 Sample Identification: 266106 TAL  
 Interface Type: 4200/4300/4400  
 Instron Corporation  
 Series IX Automated Materials Testing System 8.24 .00  
 Test Date: 27 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 3.5M S/E \*\* NANOTEK \*\*

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

Compound / Batch no. SBS -15/EC Batch No\*\*266106\*\*

Production date 26/09/2021 1

Direction LONGITUDINAL

Sample comments:  
 Conditioning at least 20 hrs

	Load at Max.Load (N/5cm)	Load at Cursor Point 1 (N/5cm)	% Strain at Cursor Point 1 (%)	% Strain at Max.Load (%)	Load at Cursor Point 1 (KN/m)
1	992.200	992.200	56.161	56.213	19.844
2	875.200	864.420	53.572	52.467	17.288
3	926.800	921.340	55.039	54.480	18.427
4	807.800	791.140	52.820	51.707	15.823
5	978.800	977.180	57.004	56.560	19.544
Mean	916.160	909.256	54.919	54.285	18.185
S.D.	76.221	83.068	1.741	2.173	1.661



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

Tensile test ASTM D-5147

Test type: Tensile  
 Operator name: EMAD GHONAME  
 Sample Identification: 266106 TAT  
 Interface Type: 4200/4300/4400

Instron Corporation  
 Series IX Automated Materials Testing System 8.24.00  
 Test Date: 27 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 3.5M S/E \*\* NANOTEK \*\*

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

Compound / Batch no. SBS -15/EC Batch No\*\*266106\*\*

Production date 26/09/2021 1

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	609.400	592.200	60.163	58.773	11.844
2	665.000	662.540	60.459	59.520	13.251
3	635.400	628.720	56.688	55.693	12.574
4	714.600	714.620	64.821	64.827	14.292
5	587.200	584.160	59.478	58.707	11.683
Mean	642.320	636.448	60.322	59.504	12.729
S.D.	49.771	53.720	2.924	3.317	1.074

BITUNIL  
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: 266106 RAL  
Interface Type: 4200/4300/4400

Instron Corporation  
Series IX Automated Materials Testing System 8.2-1.00  
Test Date: 27 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 3.5M S/E \*\* NANOTEK \*\*

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

Compound / Batch no. SBS -15/EC Batch No\*\*266106\*\*

Production date 26/09/2021 1

Direction LONGITUDINAL

Sample comments:

Conditioning at least 20 hrs.

	Load at Max.Load (N)	Avg Ld Between Limits 1 (N)
1	675.400	627.530
2	684.600	651.439
Mean	680.000	639.485
S.D.	6.505	16.906

BITUNIL  
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: 266106 RAT  
Interface Type: 4200/4300/4400

Instron Corporation  
Series IX Automated Materials Testing System 8.2-4.00  
Test Date: 27 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 3.5M S/E \*\* NANOTEK \*\*

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

Compound / Batch no. SBS -15/EC Batch No\*\*266106\*\*

Production date 26/09/2021 1

Direction TRANSVERSAL

Sample comments:  
Conditioning at least 20 hrs

	Load at Max.Load (N)	Avg Ld Between Limits I (N)
1	499.300	464.248
2	462.800	420.521
Mean	481.050	442.384
S.D.	25.809	30.919

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: 266106 REL  
Interface Type: 4200/4300/4400  
Instron Corporation  
Series IX Automated Materials Testing System 8.2-4.00  
Test Date: 27 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 3.5M S/E \*\* NANOTEK \*\*

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

Compound / Batch no. SBS -15/EC Batch No\*\*266106\*\*

Production date 26/09/2021 1

Direction LONGITUDINAL

Sample comments:  
Conditioning at least 20 hrs

	Load at Max.Load (N)	Avg Ld Between Limits I (N)
1	207.000	181.099
2	245.500	220.227
3	252.200	223.671
4	232.600	195.057
5	257.400	208.215
Mean	238.940	205.654
S.D.	20.125	17.740

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: 266106 RET  
Interface Type: 4200/4300/4400

Instron Corporation  
Series IX Automated Materials Testing System 8.2-1.00  
Test Date: 27 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 3.5M S/E \*\* NANOTEK \*\*

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

Compound / Batch no. SBS -15/EC Batch No\*\*266106\*\*

Production date 26/09/2021 I

Direction TRANSVERSAL

Sample comments:  
Conditioning at least 20 hrs

	Load at Max.Load (N)	Avg Ld Between Limits I (N)
1	282.300	249.505
2	256.400	234.040
3	256.000	229.409
4	270.600	234.729
5	386.200	262.061
Mean	290.300	241.949
S.D.	54.714	13.542



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 GHONAM  
 Sample Identification: 266106 JEL  
 Interface Type: 4200/4300/4400  
 Inatron Corporation  
 Series IX Automated Materials Testing System 8.2-1.00  
 Test Date: 28 September 2021

Sample Rate (pts/secs): 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 3.5M S/E \*\* NANOTEK \*\*

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

Compound / Batch no. SBS -15/EC Batch No\*\*266106\*\*

Production date 26/09/2021 1

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	975.200	974.490	35.935	35.851
2	980.500	980.530	32.030	32.027
3	987.200	987.240	35.895	35.894
4	759.500	758.120	26.505	26.837
5	935.300	917.850	32.275	32.690
Mean	927.540	923.646	32.528	32.660
S.D.	96.090	96.563	3.858	3.706

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: 266106 JET  
 Interface Type: 4200/4300/4400  
 Instron Corporation  
 Series IX Automated Materials Testing System 8.2-1.00  
 Test Date: 28 September 2021

Sample Rate (pts/secs): 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 3.5M S/E \*\* NANOTEK \*\*

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

Compound / Batch no. SBS -15/EC Batch No\*\*266106\*\*

Production date 26/09/2021 1

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	633.000	604.020	39.150	40.064
2	648.600	614.760	41.210	42.877
3	589.000	538.520	35.680	37.180
4	576.900	576.910	39.455	39.204
5	619.900	619.590	43.440	43.187
Mean	613.480	590.760	39.787	40.503
S.D.	29.971	33.555	2.862	2.538

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: 266106 PEL  
Interface Type: 4200/4300/4400

Instron Corporation  
Series IX Automated Materials Testing System 8.2-1.00  
Test Date: 28 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 3.5M S/E \*\* NANOTEK \*\*

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

Compound / Batch no. SBS -15/EC Batch No\*\*266106\*\*

Production date 26/09/2021 1

Direction ( 5 x 40 ) Peeling @ 180

Sample comments:

Conditioning at least 20 hrs

	Avg Ld Between Limits 1 ( 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