

Family Name	: NILOFLEX
Product Name	: NILOFLEX 15 PY
Product Full Name	: NILOFLEX 15 PY 400 Sand 4mm S/E
Type of Product	: an Elastomeric SBS
Type of Reinforcement	: POLYESTER

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

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	Pass	4391/1850-1	23/09/2021	
*	Thickness	EN 1849-1	mm	-5%	4	4.00	4391/1849-1	23/09/2021	
*	Weight	EN 1849-1	kg/m2	-10%	-	-	-	-	
*	Length	EN 1848-1	m	-1%	10	10.02	4391/1848-1	23/09/2021	
*	Width	EN 1848-1	m	-1%	1	1.002	4391/1848-1	23/09/2021	
*	Straightness	EN 1848-1	-	20mm/10m	± 10	2	4391/1848-1	23/09/2021	
*	Flexibility at low temperature	EN 1109	°c/ø mm *	≤	-15	U.S. : -15 L.S. : -15	4391/1109	23/09/2021	
*	Flow resistance at elevated Temp.	EN 1110	°c	≥	100	100	4391/1110	23/09/2021	
*	Water Impermeability (Water tightness)	EN 1928 method A	60 KPa	Passed	Passed	60	4391/1928	26/09/2021	
-	Vapour Permeability	EN 1931	μ	-	20000	20,000	use the min. value as per Norm.		
*	Tensile Strength Longitudinal	EN 12311-1	N/50mm	-20%	950	909	Machine report	23/09/2021	
*	Tensile Strength Transversal	EN 12311-1	N/50mm	-20%	700	613	Machine report	23/09/2021	
*	Elongation @ Break Longitudinal	EN 12311-1	%	-15 absolute (polyester only)	45	33	Machine report	23/09/2021	
*	Elongation @ Break Transversal	EN 12311-1	%	-15 absolute (polyester only)	50	42	Machine report	23/09/2021	
-	Tear resistance (nail shank) :Longitudinal	EN 12310-1	N	-30%	225	259	Machine report	23/09/2021	
-	Tear resistance (nail shank) :Transversal	EN 12310-1	N	-30%	225	281	Machine report	23/09/2021	
-	Dimensional stability	EN 1107-1	%	≤	± 0.5	-0.43	4391/1107-1	27/09/2021	
-	Resistance to Static loading	EN12730 method A	kg	Min.	25	25	4391/12730	25/09/2021	
-	Resistance to Impact	EN12691 method B	mm	Min.	900	900	4391/12691	26/09/2021	
-	Peel resistance of joints	EN 12316-1	N/50mm	-20N	-	134	Machine report	25/09/2021	
-	Shear resistance of joints :Longitudinal	EN 12317-1	N/50mm	-20%	950	940	Machine report	25/09/2021	
-	Shear resistance of joints:Transversal	EN 12317-1	N/50mm	-20%	700	623	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	F roof	No Performance Determined		
*	Reaction of Fire	EN 11925-2/EN 13501-1	Class	-	E	E	-	-	
-	Watertightness after stretching at low temperature	EN13897	%	-	-	-	-	-	
-	Adhesion of Granules	EN12039	%	Max.	-	-	-	-	
-	Root Resistance	EN 13948	-	NPD	NPD	NPD	-	-	
-	Dangerous Substances	-	-	-	Free	Free	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. : 4391/1848-1/2021

Product Identification

Product FULL name : NILOFLEX 15 PY 400 Sand 4.00 mm S/E code: 034/1
 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 09
 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 13916		
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 (ĝ -100)
Conditioning before testing	Not Required except in case of dispute		

Results

	Length	Width	Straightness
Measured Value	10020.0 mm	1002.00 mm	102.0 mm (ĝ -100) Max. deviation
Expressed Value	10,020 mm	1,002.0 mm	2 mm

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. : 4391/1849-1/2021

Product Identification

Product FULL name : NILOFLEX 15 PY 400 Sand 4.00 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

code: 031.1

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

Batch No. : 264 1 09
 Upper surfacing : (S00) Sand - Rashidi (200 micron)
 Lower surfacing : (E03) (Bitunil ISO Printed English & English) HD PE Film Printed

Sampling

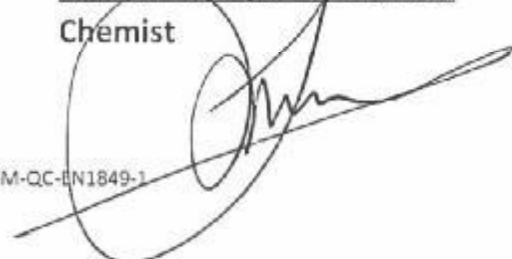
	Thickness	Mass per Unit Area
Sampling	According to EN 13416	
Number of samples	1 sample	3 cutting sample from 1
Test Piece	> 800 mm * 100 mm	> 800 mm * > 400mm
Dimensions of samples	use the test piece	100 mm * 100 mm
Measurements	10 places (values)	3 weights (values)
Expression of results	Mean of 10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

Results

	Thickness	Mass per Unit Area
Value 1	3.98 mm	60.70 g
Value 2	4.00 mm	59.40 g
Value 3	4.00 mm	61.10 g
Value 4	4.02 mm	
Value 5	3.99 mm	
Value 6	4.00 mm	
Value 7	3.99 mm	
Value 8	4.02 mm	
Value 9	4.02 mm	
Value 10	4.00 mm	
Average	4.00 mm	60.4 g / 10 = 6.0 Kg/m²

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. : 4391/1109/2021

Product Identification

Product FULL name : NILOFLEX 15 PY 400 Sand 4.00 mm S/E Code: 04411
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 09
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
Result	-15 °C	-15 °C

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. : 4391/1110/2021

Product Identification

Product FULL name : NILOFLEX 15 PY 400 Sand 4.00 mm S/E Code: 044.11
 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 09
 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
I. Droplets observed	No droplets		No droplets	
II. Difference ΔX*				
Specimen 1/1*	0.10	mm	0.08	mm
Specimen 2/2*	0.08	mm	0.05	mm
Specimen 3/3*	0.17	mm	0.12	mm
Mean	0.1	mm	0.1	mm
<small>* Δx is the difference between initial length of the test specimen and the final length after the test period in mm.</small>				
Result	Passed		Passed	

Laboratory Quality Control

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

Date of testing : 23/09/2021 Thursday
 Report No. : 4391/1850/2021

Product Identification

Product FULL name : NILOFLEX 15 PY 400 Sand 4.00 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 09
 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 Picce	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	-	-

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Flexible sheets for Waterproofing
Determination of Watertightness
EN 1928:2000

Date of testing : 26/09/2021 Sunday
Report No. : 4391/1928/2021

Product Identification

Join with Inatial Type Test : 00100

Product FULL name : NILOFLEX 15 PY 400 Sand 4.00 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 : PYJM 032/180
Batch No. : 264 1 09
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 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 : **25/09/2021 Saturday**
Report No. : 4391/12730/2021

Product Identification

Join with Initial Type Test : 00100

Product FULL name : NILOFLEX 15 PY 400 Sand 4.00 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 09
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 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

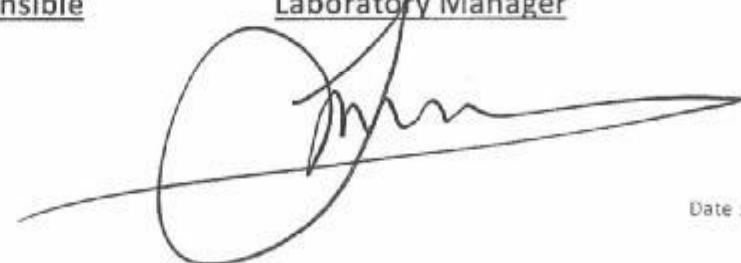
	0	5	10	15	20	25	30	35	40	Kg
Sample 1	-	-	-	-	-	No	-	-	-	
Sample 2	-	-	-	-	-	No	-	-	-	
Sample 3	-	-	-	-	-	No	-	-	-	

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 : 26/09/2021 Sunday
Report No. : 4391/12691/2021

Product Identification

Join with Inatial Type Test : 00100
Product FULL name : NILOFLEX 15 PY 400 Sand 4.00 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 09
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 Leakage
Expression of results	No cracks or leakage 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

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

Date of testing : 27/09/2021 Monday
 Report No. : 4391/1107-1/2021

Product Identification

Join with Initial Type Test : 00100

Product FULL name : NILOFLEX 15 PY 400 Sand 4.00 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 09
 Upper surfacing : (S00) Sand - Rashidi (200 micron)
 Lower surfacing : (E03) (Bitunil ISO Printed English & English) HD PE Film Printed

(001-01411)

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 dimension with Longitudinal direction
Test Piece	5
Dimensions of samples	250 ± 1 mm * 50 ± 1 mm
Measurements	Measuring using optical device the difference distance between initial mark reference L ₀ and second mark for each test specimen to nearest 0.05 mm
Expression of results	The % of the difference distance between initial mark reference L ₀ and second mark with reference to reference distance L ₀ , 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 measurements	at 23±2 °c for at least 4 hr.

Results

	Reference	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
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Result close to nearest 0.1 %

-0.43

Tested and Reported by
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 Alexandria , EGYPT

Tensile test extensometer EN 12311

Test type: Tensile
 Operator name: EMAD GHONAME
 Sample Identification: 264109 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 4M S/E ** NANOTEK **

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

Compound / Batch no. SBS -15/EC Batch No**264109**

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	918.700	914.890	33.760	34.241
2	945.200	914.360	34.620	35.369
3	864.700	768.320	26.440	27.718
4	935.000	928.590	29.840	30.241
5	883.500	883.220	39.920	39.543
Mean	909.420	881.876	32.916	33.422
S.D.	34.251	65.620	5.101	4.598

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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: 264109 TET Test Date: 23 September 2021
 Interface Type: 4200/4300/4400

Sample Rate (pts/secs): 6.6670
 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 4M S/E ** NANOTEK **

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

Compound / Batch no. SBS -15/EC Batch No**264109**

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 Max.Load (%)	% Strain at Cursor Point I (%)
1	617.200	573.690	42.720	44.456
2	670.900	641.870	36.130	37.986
3	668.500	653.690	40.950	42.026
4	506.600	489.390	35.500	36.818
5	605.400	601.870	45.460	46.281
Mean	613.720	592.102	40.152	41.514
S.D.	66.758	65.677	4.279	4.066

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 Alexandria , EGYPT

Tensile test ASTM D-5147

Test type: Tensile
 Operator name: EMAD GHONAME
 Sample Identification: 264109 TAL
 Interface Type: 4200/4300/4400

Instron Corporation
 Series IX Automated Materials Testing System 8.24.C00
 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 4M S/E ** NANOTEK **

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

Compound / Batch no. SBS -15/EC Batch No**264109**

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	960.600	960.520	65.575	65.853	19.210
2	922.400	915.160	57.681	57.453	18.303
3	916.600	911.660	58.245	58.080	18.233
4	924.600	924.280	56.557	56.840	18.486
5	935.000	931.540	57.475	58.080	18.631
Mean	931.840	928.632	59.106	59.261	18.573
S.D.	17.399	19.454	3.667	3.721	0.389

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Tensile test ASTM D-5147

Test type: Tensile Instron Corporation
 Operator name: EMAD GHOMAME Series IX Automated Materials Testing System 8.24.00
 Sample Identification: 264109 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 4M S/E ** NANOTEK **

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

Compound / Batch no. SBS -15/EC Batch No**264109**

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 Cursor Point 1 (%)	% Strain at Max.Load (%)	Load at Cursor Point 1 (KN/m)
1	621.200	604.280	64.484	59.320	12.086
2	610.000	576.640	61.821	55.827	11.533
3	702.600	665.760	62.245	56.360	13.315
4	577.000	573.140	47.469	46.133	11.463
5	582.800	572.340	63.019	60.747	11.447
6	700.400	689.660	67.004	63.667	13.793
Mean	632.333	613.637	61.007	57.009	12.273
S.D.	56.051	51.572	6.893	6.062	1.031

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: 264109 RAL Test Date: 23 September 2021
Interface Type: 4200/4300/4400

Sample Rate (pts/secs): 10.0000 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 4M S/E ** NANOTEK **

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

Compound / Batch no. SBS -15/EC Batch No**264109**

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	688.900	639.842
2	631.900	561.615
Mean	660.400	600.729
S.D.	40.305	55.315

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: 264109 RAT Test Date: 23 September 2021
Interface Type: 4200/4300/4400

Sample Rate (pts/sees): 10.0000 Humidity (%): 50
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 Temperature: 23 C

Membrane/Thickness NILOFLEX-15PY 4M S/E ** NANOTEK **

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

Compound / Batch no. SBS -15/EC Batch No**264109**

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	494.000	454.834
2	466.300	432.517
Mean	480.150	443.676
S.D.	19.587	15.780

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

Tearing Strength EN 12310-1

Test type: Tensile Instron Corporation
Operator name: EMAD GHONAME Series IX Automated Materials Testing System 8.24.00
Sample Identification: 264109 REL Test Date: 23 September 2021
Interface Type: 4200/4300/4400

Sample Rate (pts/secs): 10.0000 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 4M S/E ** NANOTEK **

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

Compound / Batch no. SBS -15/EC Batch No**264109**

Production date 22/09/2021 III

Direction LONGITUDINAL

Sample comments:

Conditioning at least 20 hrs

	Load at Max Load (N)	Avg Ld Between Limits I (N)
1	268.300	232.427
2	317.000	198.067
3	240.900	177.331
4	234.400	195.439
5	238.000	165.122
Mean	259.720	193.677
S.D.	34.719	25.527

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

Tearing Strength FN 12310-1

Test type: Tensile
Operator name: EMAD GHONAME
Sample Identification: 264109 RET
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 4M S/E ** NANOTEK **

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

Compound / Batch no. SBS -15/EC Batch No**264109**

Production date 22/09/2021 III

Direction TRANSVERSAL

Sample comments:

Conditioning at least 20 hrs

	Load at Max.Load (N)	Avg Ld Between Limits 1 (N)
1	236.500	216.697
2	269.500	247.697
3	376.500	302.954
4	274.100	247.673
5	251.500	235.982
Mean	281.620	250.201
S.D.	55.111	32.094

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: 264109 JEL 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 4M S/E ** NANOTEK **

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

Compound / Batch no. SBS -15/EC Batch No***264109**

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 Max.Load (%)	% Strain at Cursor Point I (%)
1	951.700	943.620	35.325	35.741
2	959.100	958.380	43.740	43.904
3	890.700	890.200	36.070	36.154
4	959.700	959.060	30.100	30.181
5	941.500	941.470	36.160	36.158
Mean	940.540	938.546	36.279	36.427
S.D.	28.814	28.222	4.869	4.887

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: 264109 JET
 Interface Type: 4200/4300/4400

Instron Corporation
 Series IX Automated Materials Testing System 8.24.C00
 Test Date: 25 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 4M S/E ** NANOTEK **

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

Compound / Batch no. SBS -15/EC Batch No**264109**

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 Max.Load (%)	% Strain at Cursor Point I (%)
1	615.600	613.950	36.985	37.568
2	687.500	673.820	39.785	41.534
3	661.500	659.860	42.130	42.714
4	564.800	546.840	28.915	32.500
5	588.200	583.890	34.500	35.334
Mean	623.520	615.672	36.463	37.930
S.D.	50.730	52.642	5.105	4.249

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: 264109 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 4M S/E ** NANOTEK **

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

Compound / Batch no. SBS -15/EC Batch No**264109**

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