



**EKOTEKS LABORATUVAR ve GÖZETİM  
HİZMETLERİ A.Ş.**

Esenyurt Firuzköy Bulvarı No:29 34325 Avcılar  
İstanbul/ TÜRKİYE

**TEST REPORT  
DENEY RAPORU**

**EKOTEKS**

20013726

05-20

**Customer name:** PORTAVITA SRL  
**Address:** REPUBLIC MOLDOVA CHISINAU STR PETRICAN/MOLDOVA  
**Buyer name:** -  
**Contact Person:** SERGEY GROZA  
**Order No:** -  
**Article No:** -  
**Name and identity of test item:** One sample of white fabric.  
**The date of receipt of test item:** 28.04.2020  
**Re-submitted/ re-confirmation date:** -  
**Date of test:** 28.04.2020-07.05.2020  
**Remarks:** -  
**Sampling:** The results given in this report belong to the received sample by vendor.  
**End-Use:** -  
**Care Label:** Not specified.  
**Number of pages of the report:** 8

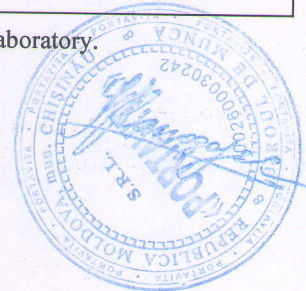
**Seal**

**Date**  
08.05.2020

**Customer Representative**  
Neslihan BÖLÜK

**Head of Testing Laboratory**  
Sevim A. RAZAK

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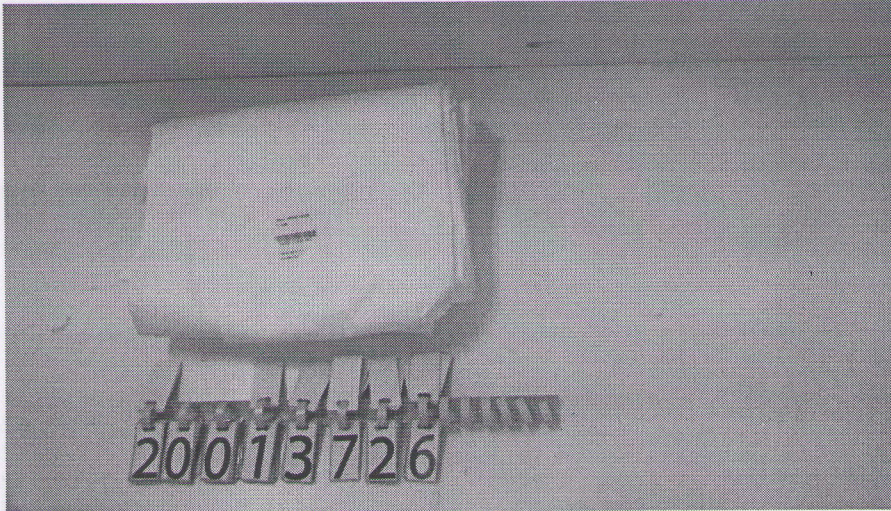
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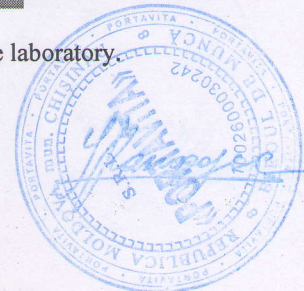
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REQUIRED TESTS	RESULT	COMMENTS
<b>PHYSICAL PROPERTIES TESTS<sup>(1)</sup></b>		
Abrasion	-	Class 6
Water Permeability	-	Class 6
Tear Strength	-	Class 2
Tensile Strength	-	Class 1
Repellency to Liquids	-	Class 3
Resistance To Penetration By Liquids	-	Class 3
Seam Strength	-	Class 1
Flammability	F	
<b>MICROBIOLOGICAL TESTS</b>		
Wet-Bacterial Penetration <sup>(2)</sup>	P	
Antibacterial Activity <sup>(3)</sup>	-	
P: Pass F: Fail R: Refer to retailer technologist <sup>(1)</sup> Tests were evaluated according to BS EN 14325:2018 limit values. <sup>(2)</sup> Tests were evaluated according to EN 22610:2006 limit values. <sup>(3)</sup> No requirement was given.		

REMARK: Original samples are kept for 3 months and all technical records are kept for 5 years unless otherwise specified. If requested, measurement uncertainty will be reported. But unless otherwise specified, measurement uncertainty is not considered while stating compliance with specification or limit values. The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95 %. Tests marked (\*) in this report are not included in the accreditation schedule.



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## TEST RESULTS

**Test Method : BS EN 14325:2018 ( PROTECTIVE CLOTHING AGAINST CHEMICALS:TEST METHODS AND PERFORMANCE CLASSIFICATION OF CHEMICAL PROTECTIVE CLOTHING MATERIALS,SEAMS,JOINS AND ASSEMBLAGES (\*)**

### ABRASION RESISTANCE AND LEAK TIGHTNESS

#### **Clause 4.4.Abrasion Resistance (EN ISO 12947-2) ANNEX-B**

Martindale Test Machine (47.5±2 rpm) with Lissajous Figure.

9 kPa pressure,

Performed in the conditioned room (20±2°C-65%±4).

#### RESULT

No abrasion @ 2.000 revs

#### CLASS

6

Classified according to the  
Table-1

Determination of the highest number of abrasion rubs which does not cause damage to the material and which shall be used for the performance classification.

The abrasion resistance of sample shall be Classified according to the levels of performance given in Table-1

Table-1 Classification of Abrasion Resistance

Class	Number of rubs
6	>2000
5	>1000
4	>400
3	>100
2	>40
1	>10

#### **Clause 4.4.2.3 Hydrostatic head end –point determination (EN 20811)**

If the average hydrostatic head exceeds 200mm,then the hydrostatic head method is applicable and the leak tightness shall be determined.

### WATER PERMEABILITY ; EN ISO 811:2018

Hydrostatic Head Tester, Textest marka Fx 3000 model

Temperature of water10.°C. Pressure increase ratio 10 mbar/dk.

Performed in the conditioned room (20±2°C-65%±4)

#### RESULT

Sample 1	186.7 mm SS
Sample 2	230.5 mm SS
Sample 3	279.5 mm SS
Sample 4	195.84 mm SS
Sample 5	179.5 mm SS
Average	214.4 mm SS

#### REQUIREMENT

>200 mmSS





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## TEST RESULTS

### TRAPEZOIDAL TEAR STRENGTH

**Clause: 4.7. Trapezoidal Tear Resistance** TS EN ISO 9073-4:2002(\*)

Instron 5969 Speed:100±10 mm/min, Gauge length:5cm

The average results are given for width and length direction of five samples.

2 pre-tension applied

Performed in the conditioned room. (20±2°C - 65%±4)

**Width** **RESULT**  
36.5 N

**CLASS**

2

Classified according to  
the Table-4

**Length** 81.0 N

Table-4 Classification of Trapezoidal Tear Resistance

Class	Tear Strength
6	>150 N
5	>100 N
4	>60 N
3	>40 N
2	>20 N
1	>10 N

### TENSILE STRENGTH

**Clause 4.9. Tensile Strength** EN ISO 13934-1:2013

Instron 5969 (Load: 50 kN), Strip Method.

Speed: 100 mm/min±10, Gauge length 200 mm.

Pre-load was not applied. Without wetting samples.

The average results are given for width and length direction of five samples.

Performed in the conditioned room (20±2°C-65%±4).

**Width** **RESULT**  
34.9 N

**CLASS**

1

Classified according to  
the Table-5

**Length** 53.2 N  
Table-4 Classification of Tensile Strength

Class	Tensile Strength
6	>1000 N
5	>500 N
4	>250 N
3	>100 N
2	>60 N
1	>30N





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**REPELLENCY TO LIQUIDS**

**Clause 4.12 Repellency to Liquids (EN ISO 6530:2005)**

When tested in accordance with EN ISO 6530 for repellency to the liquid chemicals given in Table -9, the material shall be classified According to the levels performance in given Table-10 for each chemical tested.

Use those liquids against which protection is required, water is also convenient and safe liquid for general screening purposes.

Performed in the conditioned room ( $20 \pm 2^\circ\text{C}$ - $65\% \pm 4$ ).

For each test liquid ,cut six test specimens of ( $360 \pm 2$ )mm by ( $235 \pm 5$ )mm from the sample.

Chemicals shall be of analytical purity grade.

Discharged the test liquid (10cm 3) within (10 $\pm$ 1)s

**Table-9 List of reference chemicals for absorption ,penetration and repellency testing**

Chemical	Concentration weight %	Temperature of chemical ( $\pm 2^\circ\text{C}$ )
Sulfuric Acid (H <sub>2</sub> SO <sub>4</sub> )	30	20
Sodium Hydroxide (NaOH)	10	20
o-Xylene	Undiluted	20

**Table 10- Classification of Repellency to liquids**

Class	Repellency Index ( $I_R$ )
3	> 90 %
2	>80 %
1	>70 %

**Clause 4.13 Resistance to penetration by liquids (EN ISO 6530)**

**Table 11- Classification of Resistance to penetration by liquids**

Class	Penetration Index ( $I_P$ )
3	< 1 %
2	< 5 %
1	<10 %

**RESULT**

Chemical	Concentration weight %	$I_P$	Class	$I_R$	Class
Sulfuric Acid (H <sub>2</sub> SO <sub>4</sub> )	30	0%	3	96.7%	3
Sodium Hydroxide (NaOH)	10	0%	3	87%	2
o-Xylene	Undiluted	1.1%	2	86.9%	2
$I_P$ : index of penetration $I_R$ : index of repellency $I_A$ : index of absorption					





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**SEAM STRENGTH-GRAB METHOD**

**Clause 5.5 Seam Strength** ISO 13935-2: 2014

Jaw Speed: 50±5 mm/min, Gauge Length: 100 mm±1 mm.

Seam Type : 301. 100 % Polyester core-spun sewing-thread was used.

5kN. load was applied.

The average results are given for width and length direction of five samples.

Performed in the conditioned room(20±2°C-65%±4)

	<u>Seam Strength (N)</u>	<u>Fail</u>	<u>CLASS</u>
Width	83.7	FTS	1 Classified according to the Table-13
Length	31.3	FTS	

FTS : Fabric Tear At The Seam

Table 13- Classification of Seam Strength

<b>CLASS</b>	<b>Seam strength</b>
6	>500 N
5	>300 N
4	>125 N
3	>75 N
2	>50 N
1	>30 N

**FLAMMABILITY ;**

**Clause 4.14. Flammability Resistance** EN 13274-4:2001(\*)- Method 2

Conditioning	65±5 % RH, 20±2°C/24 hours
Test atmosphere	16-32° (±1°C)
Flame height	40± 4 mm
Gas type	Propane
Flame temperature	800±50°C
Flame application time	12 sec
RESULT	FAIL; Complete burning of sample during 12 sec. duration of flame application.





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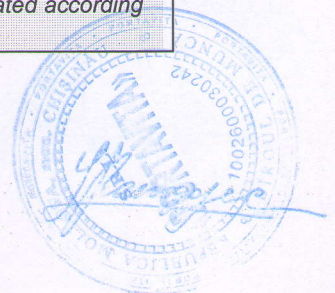
## TEST RESULTS

**Test Method: BS EN 22610:2006** (Surgical drapes, garments and fresh air clothes used as medical devices for patients, hospital staff and equipment - Test method for determining the resistance to wet bacterial permeability) (\*)

A test sample is placed on the agar plate on a rotating disc. Bacteria carrier material and coating film are placed on the test sample and all parts are fixed on the disk. A finger is placed on the test sample to apply a certain force ( $3N \pm 0.02$ ). The finger moves over the entire surface of the agar on the test specimen within 15 minutes. 5 studies are carried out for 15 minutes. 6. The study is repeated by inverting the sample.

<b>Sample amount:</b>	5 adet 25x25cm <sup>2</sup>
<b>Carrier Material:</b>	30 µm inceliğinde , 25x25cm <sup>2</sup> Poliüretan Film
<b>Carrier Material:</b>	25x25cm <sup>2</sup> HDPE Film
<b>Microorganism:</b>	Staphylococcus aureus ATCC 29213
<b>Bacteria Concentration (kob / ml):</b>	1-4x10 <sup>4</sup> kob/ml
<b>Incubation Conditions:</b>	(36±1)°C 48 saat

RESULTS			
Number of Populating Bacteria (cfu)		Population Rate	
X <sub>1</sub>	200	R <sub>CUM1</sub>	0,1
X <sub>2</sub>	200	R <sub>CUM2</sub>	0,2
X <sub>3</sub>	300	R <sub>CUM3</sub>	0,3
X <sub>4</sub>	350	R <sub>CUM4</sub>	0,5
X <sub>5</sub>	280	R <sub>CUM5</sub>	0,7
Z	700		
T		2030	
X <sub>1</sub> ..... X <sub>5</sub> : Number of colonies grown in 5 parallel petri in the same sample			
Z : number of colonies growing in sixth petri			
T: X <sub>1</sub> + X <sub>2</sub> + X <sub>3</sub> + X <sub>4</sub> + X <sub>5</sub> + Z			
R <sub>CUM1</sub> = X <sub>1</sub> /T			
R <sub>CUM2</sub> = (X <sub>2</sub> + X <sub>1</sub> )/T			
R <sub>CUM3</sub> = (X <sub>3</sub> + X <sub>2</sub> + X <sub>1</sub> )/T			
R <sub>CUM4</sub> = (X <sub>4</sub> + X <sub>3</sub> + X <sub>2</sub> + X <sub>1</sub> )/T			
R <sub>CUM5</sub> = (X <sub>5</sub> + X <sub>4</sub> + X <sub>3</sub> + X <sub>2</sub> + X <sub>1</sub> )/T			
BARRIER INDEX (IB)			
	Result		Requirement(*)
I <sub>B</sub>	4,2		≥2,8
I <sub>B</sub> = 6 – (CUM1 + CUM2 + CUM3 + CUM4 + CUM5)			
* EN 13795-1: 2019 Surgical garments and drapes - Requirements and test methods are evaluated according to Table-1.			





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**TEST RESULTS**

Test Method : **ASTM E2149:2013a** Standard Test Method for Determining the Antimicrobial Activity of Antimicrobial Agents Under Dynamic Contact Conditions

<b>RESULTS</b>	
<b>Inoculum Control</b>	<b>Treated (Test) Sample</b>
<b>after specified contact time*</b>	<b>after specified contact time*</b>
5x10 <sup>5</sup> cfu/ml	2.5x10 <sup>3</sup> cfu/ml
5.70log	3.40 log

\*The amount of growing bacteria on fabric  
cfu: colony forming units

<b>Antimicrobial Activity</b>	<b>RESULT</b>	<b>Evaluation</b>
<b>Reduction, %</b>	<b>% 99.50</b>	<b>-</b>

Mikroorganism	<i>Staphylococcus aureus</i> (ATCC 6538 (Gram(+)))
Bacterial concentration (cfu/ ml )	1.9 x10 <sup>5</sup>
Inoculum volume	50 ml
Size of sample	1g
Number of washing	-
Washing method	-
Incubation time, temperature	24 hours, 35 °C ± 2 °C
Contact time	24 hours

R %= Reduction is calculated by the following formula;

$$\%R = ((B-A)/B) \times 100$$

A = CFU per millilitre for the flask containing the treated substrate after the specified contact time.

B= CFU per millilitre for the 'inoculum only' flask after the specified contact time.

